

**COLD
WEATHERED
COMMON**

HEATING CATALOG No. 158

THE
**BEST HEATING
PROPOSITION
EVER PUBLISHED**

Chicago House Wrecking Co.

35th and Iron Sts., CHICAGO

Copyright 1909 Chicago House Wrecking Co.



As to Our Responsibility

We refer you

To any Express Company, any Railroad Company, any Bank, any Commercial Institution, or if you want more positive proof write our Bank, whose letter we publish herewith.

DROVERS DEPOSIT NATIONAL BANK

UNION STOCK YARDS,
CAPITAL & SURPLUS \$750,000.

Chicago, Ill.

TO WHOM IT MAY CONCERN

We take pleasure in testifying to the responsibility of the CHICAGO HOUSE WRECKING COMPANY who is a customer of this bank and who are incorporated under the laws of the State of Illinois, and have a fully paid up capital and surplus of \$1,000,000.

They are the leading establishment of their kind in the world, occupying large quarters, and employing a great number of people.

The Officers are personally known to us, and we know them to be first class business men who will carry out their agreements. We commend them to the business public, feeling sure that any contracts or dealings they may enter into, will be entirely satisfactory.

Yours truly,



Chicago House Wrecking Co.

Capital Stock and Surplus
\$1,000,000

35th and Iron Streets

-

Chicago, Illinois

|| OUR NAME ||

CHICAGO HOUSE WRECKING CO.

Where did we get the name? That is what you would certainly ask if you came to Chicago and went through our plant. Acres and acres of Brand New Lumber piled mountain high. Acres, yes miles of floor space covered with the largest and finest display of Modern Brand New Furniture ever exhibited in one salesroom in Chicago. Our enormous warehouses stocked to the limit of their capacity with the most modern and complete line of up-to-date, Brand New Builders' Hardware, Brand New Steel and Rubberized Roofing of the most approved brands on the market. Our modern show rooms where our Brand New Heating Apparatus, Brand New Plumbing Material, etc., are exhibited. Our enormous Machine Shops, Manufacturing Departments, etc., equipped with the most modern up-to-date tools in every line. We repeat, if you would come and take advantage of the opportunity to go through our plant, you would certainly be surprised to think that we do' business under the name of **CHICAGO HOUSE WRECKING COMPANY**.

Seventy-five per cent of our business is in Brand New Material and still we do business under this name, and we have no thought of changing it. It is rather an expensive name to us, but it is a good old name after all. We launched our business under it and we propose to stand by it at any cost. We pay out each year, enormous sums of money for advertising, and we estimate at least 10% of this amount is spent for no other purpose than to impress upon the public that the greater part of our material is brand new, and not second-hand as our name would suggest.

ORIGINALLY

The main purpose of our original organization, it is true, was to engage in the business of dismantling, and we have engineered more enormous deals in this line of industry than any other concern in the world. Every World's Fair of modern days has passed through our hands. Every mammoth wrecking undertaking of modern times, we have had something to do with it. However, we have now out grown this stage.

CHICAGO HOUSE WRECKING CO. OF TO DAY.

We have recently, entirely diverted our energies. We have spent these last few years in organizing the most complete source of supply for brand new material of every description ever brought together. We are now able to quote prices on brand new Lumber, brand new Furniture, brand new Heating Apparatus and brand new material in almost every line that are positively incomprehensible to anyone posted on values. We are no longer dealers in second-hand material exclusively, and furthermore, we are not a mushroom corporation, in business today and gone tomorrow. We are positively the largest concern of our kind on earth. Our credit and reputation for fair dealing is established throughout the country as sound as Gibralter. We are recognized everywhere as one of the largest distributors of brand new merchandise in the world, and we hold all records for low prices.

LOW PRICES

The very secret of our success, rests in our ability to quote such tremendously low prices. The greater part of our material is secured from Sheriffs' and Receivers' Sales, following business disasters throughout the country. Our stock consists of goods well bought, and we give the public the benefit of it in the low prices that we are able to quote.

WHAT OUR HEATING PLANTS ARE

Every heating plant we sell under our Gurantee Bond is absolutely brand new and perfect at every point. All fittings are brand new, standard cast iron fittings, reinforced and beaded. The valves are solid brass, heavily nickel plated; Pipe brand new; Radiators and Boilers of the latest and most modern design; cast from soft iron, prepared in a special process cupola, which reduces the possibility of castings cracking to a minimum.

The radiation is carefully estimated and scientifically proportioned throughout your house and the plant carefully designed by our engineers and the entire plant is perfect, beyond criticism.

Every statement is backed by our reputation and capital. We are in business to stay and will carry out every contract to the letter,

WHAT YOU CAN EXPECT

We emphasize these facts, so that you will know what to expect in the way of quality when you place an order for a heating plant.

We want to dispel from your mind, right here, before going one step further, any false impressions that you may have in regard to the material, which we furnish you on your heating plant, not being strictly just as high grade in every way as any material which your home dealer or any other concern may undertake to furnish you, at probably an advance of 50 or 100% over our price. We represent our material just exactly as it is and we give you the absolute privilege to return it at our expense and we will refund your money, if, on its arrival, or after you get the plant installed, you do not find it strictly up to representation in every way.

AN INSTANCE

We might recite herewith an instance of a customer of ours in Indiana who placed an order with us for a complete heating plant for his building at a saving of anyhow, 50% from the price which his home dealer had made him. He put the proposition before his home dealer and told him of the very low price which he was in position to buy his material from us, and of course, as the usual custom, the dealer started to hammer on the superior quality of his material in comparison to ours. He said, "When you get these radiators from the CHICAGO HOUSE WRECKING people, you will not be able to lay a board across the top of the radiator, it will be so far out plumb." This is a fair sample of the line of talk which these dealers use in trying to bias people's minds against our material.

We will say, however, that this customer of ours, while somewhat disheartened at these statements, patiently waited until his material arrived, and then, after taking the radiators up and placing them in his rooms and getting them out on the floor where he could see what they looked like, he tried the experiment of placing a board on the top of the radiator, as suggested by his home dealer and he then invited his dealer in to see the board laying flat on the top of the radiator without 1/16 of an inch in variation from one end of the radiator to the other. Of course, he then had to admit that the radiators were certainly plumb, but he further started to worry our customer by saying, "Oh, the radiators are all right, but wait until you get the plant installed and see how it works, then you will see your mistake." This particular plant is installed today and it is as fine a heating plant as is in the entire country at the present time and this customer has saved a cool \$150.00 by purchasing this plant of us.

LOW COST

Heretofore, a good Steam or Hot Water Heating Plant was only within the reach of the fabulously rich and sometimes the cost of a good Hot Water Heating Plant for a fair sized building would run up to as high as \$2,000. Think of it. We know this to be a fact. We have received letters from parties who paid 100% more for their plants than we could have furnished them and they could not possibly believe that we could furnish a complete hot water heating plant for a building at such a ridiculously low figure, until they came right here to our plant. After we carefully showed them the exact pattern of radiators, boiler, piping and the high-grade nickel-plated valves, etc., that we furnish on all our plants, it was only then we could convince them.

OUR GUARANTEE BOND

We publish elsewhere in this catalog a facsimile of our ironclad guarantee bond. This bond amounts to nothing less than an absolute 365-day free trial proposition. In other words, any time within one year after date of sale of your plant, if you find that it is not up to representation in every way and entirely satisfactory, we give you the privilege to return it at our expense and we will refund your money in full.

We have such absolute confidence in the quality and merits of our plants that we do not hesitate to make this proposition and we leave it with you to be the fair judge in the case, as to whether the plant has come up to our claims or not.

HOW TO ORDER

When placing an order for a heating plant with us and send us remittance, please advise us in regard to the following points, so as to save unnecessary delay and correspondence; so that the order can be promptly rushed through, without delay.

Let us know if you want us to furnish you the tools on your plant for installing. These usually figure from \$15 to \$25. We make charge for these tools and after you are through using them, they can be returned to us, and we of course refund your money, in accordance with our proposition, which is explained later on in this book. If you want these tools added to your order, let us know when you send us remittance.

Let us know what road you want the plant shipped over; also if the order is being sent C. O. D., let us know which bank you wish us to draw on. Also, let us know if you want the order rushed through at once; or if you want it held for a while. If you want to, look over the plans and approve of them before the order is sent through. If you want to leave the matter of design of your plant entirely with us, this will avoid delay and corresponding back and forth, sending the plans for approval; but if you want to look the plan over before we send the order through, please advise us in your letter, and we will be glad to submit them to you.

If these points are not fully covered in the first letter, you can fully realize the amount of time that will be saved in correspondence, etc., and it will save considerable delay on the order.

TERMS

Our terms are strictly net spot cash, F. O. B. cars Chicago. Do not take offence if we ask you to send us cash in advance. If you do not want to send us the full amount with your order, send us at least 25% on account; the balance to be paid C. O. D. We are absolutely responsible for your money and it will avoid an endless amount of investigation on our part; also much delay. Any money sent us in excess of your order will be promptly refunded.

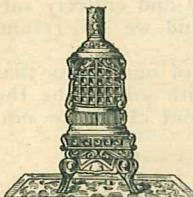
We buy our goods for cash, very often in advance, and we therefore see no reason why anyone should take offence at our request. We guarantee all our goods to be exactly as represented. If you receive any material that is not as represented, hold same subject to our order and notify us of this fact. Under no circumstances are we responsible for any damage beyond the price of the goods. No charge for repairs or expense required for defective goods or occasioned by them will be allowed without our authority.

If the goods received from us were represented as perfect and proved defective, the measure of damage will be the price of the defective article in question.

REGARDING C. O. D. SHIPMENTS

Our best advice to you is, send us remittance in full with your order. You are taking absolutely no chance whatever and this will avoid all trouble and delay in securing possession of your material after it reaches you. The bills of lading will be mailed direct to you and you can get possession immediately; while, if we made shipment, draft attached to bill of lading, there is a possibility of delays occurring in our office or elsewhere, so that the bill of lading may be delayed a day or two and the material held up on account of this. Furthermore, there is a slight charge made for collecting drafts, which you will have to pay, and there is absolutely nothing whatever gained by making shipment C. O. D. Send us cash in full with your order and you can rest assured that your order will have just exactly the same attention that it would have were we entering it charge account or C. O. D. for any amount and you will have no further annoyance after the shipment arrives and going to the bank to take up drafts, etc., and we assure you it will be more satisfactory all around.

FACTS! FACTS! FACTS!



HEATING STOVE

DEFINITION OF THE WORD AS IT WILL APPEAR TEN YEARS HENCE IN A REVISED EDITION OF WEBSTERS' DICTIONARY:

HEATING STOVE—A crude device once used for heating dwellings now practically extinct in all civilized countries. A few are still to be found in improvised mining camps and in Museum exhibits.

ARE YOU UP WITH THE TIMES?

What would you think of a man who would deliberately resort to the antiquated method of making a fire and sit down for two long hours rubbing two pieces of wood together as our ancestors had to do in days of old, in order to create a blaze, when he could just as easily have accomplished his cherished object by the mere striking of a match.



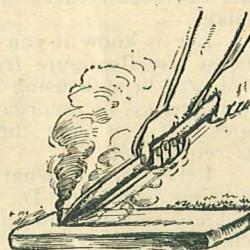
Buying a stove just as bad.



Carrying out the ashes.

BUYING A STOVE

Is he any worse than a man who will deliberately go out and pay a whole lot of money for a new heating stove when he could just as easily put a little more to it and put it in a modern and up-to-date heating plant in his home; a system whose comforting sinews would penetrate every room in his entire house, and maintain an exact temperature, even in the most remote corners of the building.



Making fire.

CARRYING UP THE COAL

Then to think of the endless annoyances, carrying out ashes over your brand new rugs and carpets, the dust smoke, gas and carrying up the coal, etc. It is impossible to keep your house clean and tidy under these conditions.



Carrying up the coal.

SMOKE DUST AND GAS

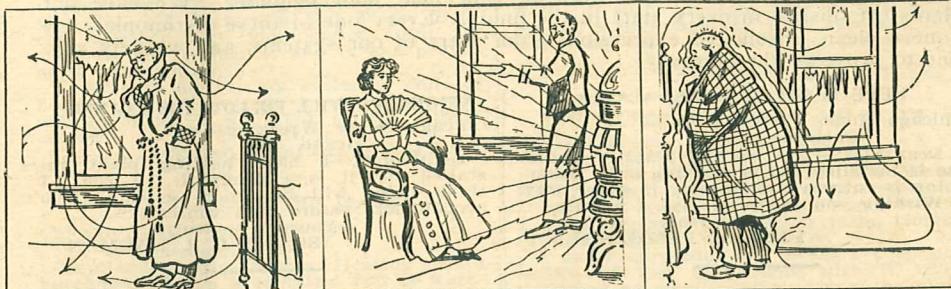
It is possible to maintain a healthful atmosphere? Why not remove all this to the basement where it belongs? The heat is all you want up-stairs. The coal, ashes, dust, etc., should be in the basement and no place else.

Put in a modern heating plant. Sit down at once and draw up a small sketch of your building. If you haven't any of our information blanks, we will be very glad to mail them to you on request. These blanks give you complete information as to what we require, and on receipt of these sketches properly filled out, we will make you a price that will surprise you. There is positively no excuse for anyone in these modern days, laying out a whole lot of money for a heating stove. When at such a slight additional cost they could have a modern heating system of this kind.



Smoke dust and gas.

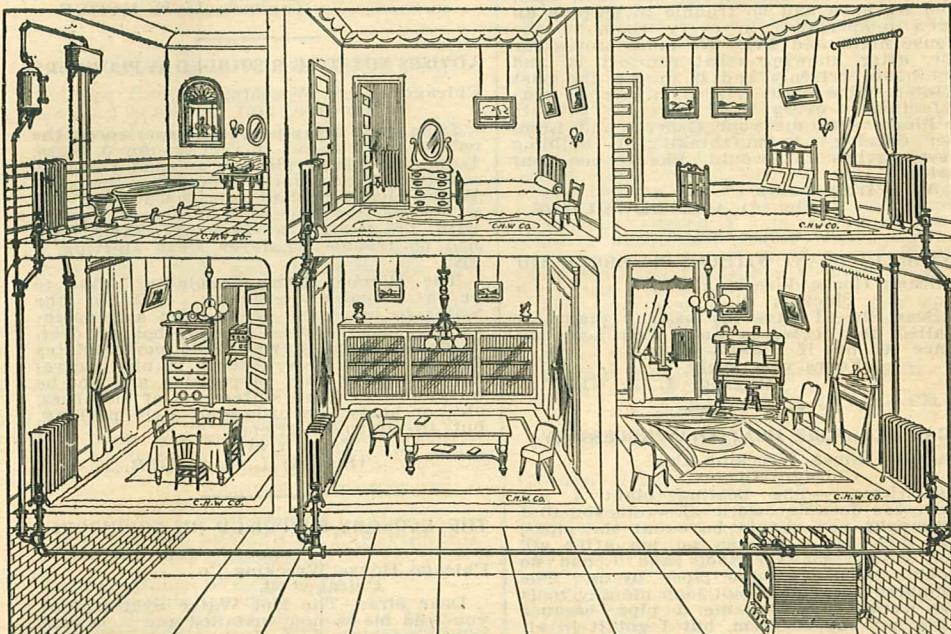
ROASTING TO DEATH IN ONE ROOM and FREEZING IN ANOTHER.



You know what you can expect from a heating stove? Roasting to death in one room and freezing in another. You can't possibly heat more than one room right, and if you heat one room right, the others will all be too cold. Compare these conditions with the

THE MODERN HEATING PLANT.

Every Room in Your House Heated to the Exact Degree of Temperature You Want.
All Fire in One Place. No Smoke, No Dirt, No Dust, No Ashes.



Not the slightest variation in temperature between one room and another in your entire home. The fire regulated to the point where it gives the utmost efficiency with a minimum amount of fuel. You can burn soft coal if you want to—Your coal bills cut in half and greater comforts thrown in.

In addition to this, your basement will be as warm as any other part of your house, and a comfortable temperature can very easily be maintained in the most severe weather that you will ever experience. The cold blizzards of winter will have no terror for you when you get a modern heating plant of this kind installed in your home, and there is no reason in the world why you should not have these comforts. It is just as cheap to be with them as without them, as it does not take many years for one of these plants to fully pay for themselves in the saving which is made in fuel.

There is positively nothing in any way intricate or dangerous about these plants and they are as harmless as any heating stove. A 14-year old boy can without any trouble whatever run either steam or a hot water heating plant for an average size residence, and the small amount of attention these plants require is really surprising.

Remember, we fit you out completely, and you will not be depending on your home plumber or steam fitter for any part of the entire apparatus.

Your rooms will have the same temperature in the morning as they had the night before, and you can maintain an even and equal temperature throughout the entire long winter with the least possible attention to the apparatus. Only those who are using these systems fully appreciate what a great comfort they are. Write us at once for an estimate—Don't delay a moment. You will be agreeably surprised at the quotation we can make.

WHAT OUR CUSTOMERS SAY

YOU WILL SAY THE SAME

Some one of these people may be your next door neighbor. We have our plants established in every state in the union. Every one of these testimonials are honest, clean, unsolicited expressions from users of our systems, and we defy any one to prove to the contrary:

HERE IS ONE IN NOME, ALASKA.

Chicago House Wrecking Co.,
Chicago, Ill.

Dear Sirs:—The heating plant you sent me is installed and is working fine. Everything is entirely satisfactory in every way. Wishing you entire success, I remain,

Yours truly,
PAUL H. FITZGERALD.

NO MORE STOVES FOR HIM.

Chicago House Wrecking Co.,
Chicago, Ill.

Gentlemen:—I am writing you in regard to the Steam Heating Plant I purchased of you last summer and installed myself. To say that we are more than pleased (after passing through the winter and proving its efficiency) is not putting it strong enough. Every room in the house has been open and we have had no trouble in keeping an even temperature in every room in the house night and day. No more stoves for me, after knowing what comfort is, and we have certainly had it during the past winter. The plant has given perfect satisfaction in every way.

Please send me your General and Lumber Catalog. I am thinking of building new porches and would like to see your prices.

Very truly yours,
(Signed) A. E. DEWHURST,

INSTALLED PLANT WITHOUT PLUMBERS' AID

Chicago House Wrecking Co.,
Chicago, Ill.

Dear Sir:—I have my heating plant installed and it works fine. Can heat my place red hot if I want to.

Yours very truly,
(Signed) L. A. NEFF.

CAN GET MORE HEAT THAN NECESSARY.

Chicago House Wrecking Co.,
Chicago, Ill.

Gentlemen:—The heating plant I got from you does fine work. I wrote you that I thought you should have cut the pipes, but then found it was no job after all. You loaned me the tools and I had no trouble in getting the pipes to fit. The plumbers here would not loan me any tools nor would they cut me a pipe, because I did not buy of them, but I got it in all right and it works fine.

Yours very truly,
(Signed) THOS. FLETCHER.

WORKS WELL IN THE COLDEST WEATHER.

Chicago House Wrecking Co.,
Chicago, Ill.

Gentlemen:—Replies to your letter of December 3, which has just reached me, will say that the Mercury Heat Circulator sent me on December 17 was received December 23, and installed.

The heating plant is working fine under very trying weather and I am very well pleased with it.

Yours very truly,
(Signed) H. G. SMITH.

NEIGHBORS WILL FOLLOW HIS EXAMPLE.

Chicago House Wrecking Co.,
Chicago, Ill.

Gentlemen:—I have heating plant installed and it is a dandy, I tell you. I think there will be others getting them around here before next winter.

Yours very truly,
(Signed) J. R. HAGMAN.

ABSOLUTELY PERFECT IN EVERY RESPECT.

Chicago House Wrecking Co.,
Chicago, Ill.

Gentlemen:—Will you please send me your complete Instruction Book?

The Hot Water Heating Plant I bought of you this Fall is absolutely perfect beyond question.

Yours respectfully,
(Signed) L. E. MOORE.

ADVISES NOT TO BE MISGUIDED BY PLUMBERS

Chicago House Wrecking Co.,
Chicago, Ill.

Dear Sirs:—Having just experienced the coldest days known in Chicago for 3 years, I am more than pleased to send you this unsolicited testimonial regarding the Hot Water Heating Plant purchased from you a few months ago. I installed this plant with practically no assistance and have had no trouble whatever since starting it up.

The Mercury Heat Circulator, I find to be a valuable accessory, enabling the water to leave the boiler with a temperature of 235 degrees without boiling over. I would advise anyone who contemplates the purchase of a heating plant to carefully consider your proposition and not be misguided by false statements of plumbers, etc., or hasty conclusions of well meaning, but ill-informed, friends.

Yours truly,
(Signed) L. E. ADLER.

THE ECONOMY SURPRISED HIS NEIGHBORS

Jan. 27, 1909.
Chicago House Wrecking Co.,
Chicago, Ill.

Dear Sirs:—The Hot Water System that you sold me is now installed and it is certainly working fine. I appreciate the way you treated me very highly.

I got 700 feet of radiation and boiler, and I used only 3 buckets of range coal in 24 hours in the coldest weather we had. It furnishes 2 stories and basement—12 rooms—and without storm doors or windows. As yet I have had no trouble whatever. A child could take care of it. I have had several neighbors here to look at it and they were all well pleased with it. They could not understand how it could heat the whole house with such a small amount of fuel.

If you want any further reference, call me up, or you can send anyone to see the plant. I put it in myself.

Very respectfully,
(Signed) PETER M. STREIT.

WHAT OUR CUSTOMERS SAY

HAS PROVED MOST SATISFACTORY

Jan. 30, 1909.

Chicago House Wrecking Co.,
Chicago, Ill.

Gentlemen:—I have installed one of your No. 175 Perfection Hot Water Boilers, together with your entire outfit for same, in my residence, and it has proved most satisfactory.

I want to add to my system a coil for heating water for domestic use. Have you any in stock; if so, what price? Kindly advise.

Yours truly,
(Signed) JASPER A. SMITH.

SAVED \$100 ON THIS PLANT

Chicago House Wrecking Co.,
Chicago, Ill.

Gentlemen:—Hot Water Heating Plant purchased of you is installed and is working fine. As near as I can figure, I saved about \$100.00 by purchasing the plant of you instead of local plumbers.

I want you to send me your book of instructions, which I note will be sent free of charge with each order.

I know you will sell many more plants here after the people see the working of my plant.

Yours very truly,
(Signed) MISS ALICE M. CHURCH.

THIS PLANT WAS SUCCESS FROM START

Chicago House Wrecking Co.,
Chicago, Ill.

Gentlemen:—I have the Hot Water Heating plant all in and in good running order. It was a success from the start; not a leak in the whole system. The plumber who put it in was more than pleased with my outfit. It is as easy and simple to run as an ordinary coal stove.

We are having 10 degrees below zero with high wind, and it heats the hall, chamber bed-room and bath-room better than I used to heat one room with my coal stove, and not burn half as much coal as I burned in the stove. It is as easy as turning over your hand to operate it. The heat is so evenly distributed that it takes but a minute to run it up all over the house.

One of my neighbors who looked over this plant was very much pleased with it and I think he will send you his order very soon.

Yours truly,
(Signed) E. C. KELSEY.

OUR BOILERS PRAISED BY EXPERIENCED PEOPLE

Chicago House Wrecking Co.,
Chicago, Ill.

Dear Sirs:—All of the stuff is here. I had it finished last Sunday; everything works fine. The boiler is in first-class condition and everybody that saw it thinks it the best boiler made, and that I got from them that know something about boilers. The plant works fine; no trouble whatever—heats fine and not a leak in the joints.

I would like to give you a chance on a hot water heater in connection with a hot water boiler. What I want is one that I can connect up with the heating plant in winter and with the kitchen stove in summer. Please let me know what it will cost.

Thanking you for your prompt attention to me, I remain

Yours truly,
(Signed) FRANK ZINK.

HIS NEIGHBORS WILL FOLLOW HIS EXAMPLE

Chicago House Wrecking Co.,
Chicago, Ill.

Gentlemen:—You will remember me buying a Hot Water Heating Plant of you last Fall. I wish to state that it has given perfect satisfaction and I am sure you will sell many more plants in this place.

Yours very truly,
(Signed) A. W. NILES.

EVEN SUPERIOR TO WHAT WE CLAIM.

Chicago House Wrecking Co.,
Chicago, Ill.

Dear Sirs:—I received my Hot Water Heating Plant from you of seven radiators. It is really better than you claim it to be. I am using soft coal and it is no trouble to warm up the whole house.

I am a carpenter and never set up one before. I had no trouble with it. The drawings by your engineers were so plain that I had no trouble whatever. I am well pleased with the entire plant and many people come to see it. I am quite sure you will receive many more orders from this place. It is the best heating plant in this city.

Thanking you for past favors, I remain

Yours very truly,
(Signed) W. A. TOMANN.

HIS 10 ROOMS NEVER VARIES 2 DEGREES

Chicago House Wrecking Co.,
Chicago, Ill.

Gentlemen:—Please send me one of your complete Instruction Books on Hot Water Heating. I gave my book to a friend of mine who is interested in house heating.

My Hot Water Heating Plant I bought of you is working fine. My building never varies more than 2 degrees night or day. I am heating 10 rooms and two bathrooms and hall on first and second floor. Have only burned 9 tons of range hard coal. I handle my drafts with an automatic thermostat and in that way I just burn what coal I need and no more to keep my house exactly at 70 degrees.

Any time you want to send any customers to look at my plant they will find the best hot water heating plant in the city for the least money.

Wishing you entire success, I remain

Yours truly,
(Signed) G. A. WALLACE.

THE NAME BEARS OUT RESULTS

April 5, 1909.

Chicago House Wrecking Co.,
Chicago, Ill.

Gentlemen:—The Hot Water Heating Plant I bought of you last Fall with your No. 67 Perfection Heater I installed myself and it has given fine results. I am well pleased with the same, and the name "Perfection" which you give these boilers is certainly not misapplied, for it is perfect in results.

I enclose you herewith another small order which I trust you will ship as soon as possible.

Yours very truly,
(Signed) A. MELLEN.

HAS GIVEN GOOD SATISFACTION FOR 3 YEARS

Chicago House Wrecking Co.,
Chicago, Ill.

Dear Sir:—Please send me one of your catalogs. I have one of your Hot Water Heating Plants installed in my house since 1906 and it gives fine satisfaction. I am more than pleased with it all the way through.

Yours very truly,
(Signed) JOS. ZARA.

The Names and Addresses of the above will be furnished on Application.

TESTIMONIALS

G. W. JENNINGS, President.

INCORPORATED 1900.

J. M. BARKER, Secy and Treas.

BRUNSWICK TOBACCO COMPANY.

MANUFACTURERS OF
TWIST AND SMOKING TOBACCODIRECTORS:
G. W. JENNINGS
E. H. JENNINGS
J. M. BARKER
W. V. BARKER

BRUNSWICK, MO.

Mr. F. J. Smyth,

Caruthersville, Mo.

Dear Sir:-

Your favor of the 22nd was received while I was away from home, hence this delay in answering same. In reply I beg to say that I bought a Hot Water Plant from the Chicago House Wrecking Co. last Fall, and I installed it myself. The plant consisted of one No. 176 Hot Water Boiler capacity of 900 feet, 8 radiators, floor mains, connections etc. and cost complete ready to set up \$284.00 F.O.B. cars Chicago.

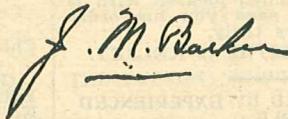
My house is a nine room house with high ceiling. I sent the Company the plans and they arranged the plant to suit. I had never had any experience in plumbing to amount to anything, yet I installed the plant without any trouble, and it has never given me a particle of trouble. I burn the ordinary soft coal, and we have no trouble in heating the whole house like Summer day and night. I attend to the furnace morning, noon and night, and my Wife never has to look at it, as the dampers are worked from a chain up stairs. It is rarely below 70 degrees when we get up in the morning, and I won't use much over Thirty Dollars worth of fuel this winter, and I have not tried to save fuel either. We have a good many hot water plants in town, but mine is the only one that has given complete satisfaction in all kinds of weather, in fact it has been the talk of the town. The great trouble with our local plumbers is that they put in the plants too small, and in severe weather, they cannot get it warm enough. The cheapest I could get any one around here to figure on my job was \$600.00, and I don't think I would have received near as good a job as I got. Any way I would not want any better one.

My best advice to any one about to put in a Hot Water plant would be to put in a good one with plenty capacity, a poor one is worse than nothing for there is no way to stretch it after you get it in, a good one is a thing of beauty and a joy forever.

The Chicago House Wrecking Co. furnished the heating apparatus for heating our factory, and all the dealings we have had with them have been very satisfactory. If I can be of any further help to you in any way I would be very glad to do so.

Yours very truly,

Dct. J. M. B.



JULIAN C. RYER,

ARTHUR W. MAY.

LAW OFFICES RYER & MAY

234 La Salle Street, Chicago.

Telephone, Harrison 1853.
March 13, 1908.Chicago House Wrecking Company,
Chicago, Ill.

GENTLEMEN:—The hot water plant that I purchased from you last fall and had installed in my house in Oak Park, replacing a hot air furnace which failed absolutely to heat house, has given entire satisfaction.

During the extreme cold weather of last winter, I had no trouble in keeping the temperature of my house at between 65 and 75 degrees throughout without pushing the boiler to its limit.

I take pride in showing my plant to those who have so far come out to inspect it, and cheerfully recommend the plant to anyone desiring a first class heating plant.

Respectfully yours,

Dic. A. W. M.

ARTHUR W. MAY.

Send Us Your Lumber Bill for Our Estimate. We Will Save You 50 Per Cent.

SATISFACTORY HEATING PLANTS.

TESTIMONIALS FROM SATISFIED CUSTOMERS.

We give herewith expressions of opinion from a number of our customers who have purchased heating plants from us, and have either set them up themselves or under their own supervision from the plans and instructions which we furnished. Most of these men had absolutely no knowledge of pipe or pipe work, and yet their plants work perfectly. Failure is impossible. Read what they say. You are at liberty to write to any of these people for further information. We only request that, as a matter of courtesy, you enclose with your letter an addressed stamped envelope for their reply.

This Customer is More Than Pleased.

Jno. S. Cameron, Supt. of Igleheart Bros. Flour Mill, Evansville, Ind., who has one of our No. 68 water boilers and eleven radiators, a total of 540 feet of radiation, writes that his heating plant is giving entire satisfaction. That the boiler is very easily handled, that his boy ten years old runs the plant all the time. He states circulation in the plant is perfect and that there is plenty of heat in every room.

This Customer Says He Has the Best Heating Plant in His Town.

Sanford Jackman, Montpelier, Ohio, who has water plant with one of our No. 67 boilers and about 450 feet of radiation, writes that his heating plant is the finest in town. Several of his neighbors who have plants installed by local dealers are complaining of not getting enough heat, but he is not bothered that way. His plant is giving him entire satisfaction.

Mr. Frew Bought His Plumbing and Heating Material From Us, and Installed it Himself.

Jas. Frew, 2421 Depot St., Fort Madison, Iowa, who has one of our No. 66 steam boilers, radiators, etc., writes that the heating plant, as well as plumbing fixtures, which he purchased from us are giving entire satisfaction.

This One From Illinois.

THE MARION ELECTRIC LIGHT COMPANY of Marion, Ill., state that their heating plant, consisting of one of our No. 65 water boilers and about 250 feet of radiation is giving perfect satisfaction. Signed, W. E. Fish, Supt.

Skeptical Neighbors Tried to Discourage This Customer From Ordering Away From His Home Dealers.

J. M. Barker, Secretary of the Brunswick Tobacco Co., Brunswick, Mo., who has a No. 176 water boiler and about 600 sq. ft. of radiation, writes us as follows:

"I finished installing the plant the first of December and fired it up immediately, and from that time to this it has never given a minute trouble. I am burning a cheap grade of soft coal, and during the recent cold spell with it 6 degrees below zero, have not had to fire it but morning, noon and night, three times a day, and do not have the damper open more than an hour altogether during the day, so you see I do not have to crowd it much, in fact I firmly believe that it would heat a house twice the size of mine. The heat does not go down over four or five degrees during the night, and it is often 70 in the house when we get up in the morning during this zero weather, which I think is pretty good on soft coal. This is the only plant put in, in this section that has ever given complete satisfaction. I would be afraid to say how many people have been to see it, and if I had the time to put them in, I could sell a half dozen plants or more this coming summer. As it is, I will be in the market for two plants like mine, and will begin to figure on them in April. I do not think I will burn over \$25.00 worth of fuel this winter, and

WE GUARANTEE TO DO AS WELL FOR YOU AS FOR ANY OF THESE PEOPLE.

TESTIMONIALS—Continued.

one of my neighbors who has a hot water plant installed by a local dealer, has burned nearly \$100.00 worth of the Semi-Anthracite already, and has never been warm a day. My plant is the talk of the town. I could not want a better one." Signed J. M. Barker.

This Steam Plant is Perfectly Satisfactory.

Jno. Schultz, President of Schultz, Baujan & Co., of Beardstown, Ill., who has one of our No. 86 Perfection Cast Iron Sectional Steam Boilers, and about 450 feet of steam radiation, writes under date of Feb. 16th, that the plant is giving entire satisfaction, and he is very highly pleased with same.

Here's One From Nebraska.

Prof. Herbert Brownell, of the Department of Physical Sciences, of the Nebraska State Normal School, Peru, Nebr., who has one of our No. 177 steam boilers and about 450 feet of steam radiation, writes that his heating plant is giving entire satisfaction, and that a number of his associates in the school are proposing to install our steam plants this coming summer.

This Customer Has Bought His Second Plant.

G. Powell, Cherokee, Iowa, has installed two of our heating plants, one a No. 67 water boiler, and the other a Keystone boiler, and says that both plants are giving perfect satisfaction in every way. He does not think there are any other heating plants in his City any more satisfactory or anything near as economical in the use of fuel as the two he purchased from us and installed.

Mr. Bruce is a Lawyer and Was Rather Skeptical, But We Gave Him a Binding Guarantee. He Has Reported This Spring That He Used Only About \$36.00 Worth of Fuel For Last Winter.

Mr. Milo M. Bruce, of Bruce & Bruce, Attorneys, Hammond, Ind., has one of our No. 67 boilers and eleven radiators, and states he has no trouble whatever to keep his house at 74 degrees without any crowding, as he usually keeps the back damper closed except a little while in the morning. Mr. Bruce says that he has the smallest boiler in his neighborhood, but it is a wonder. One of his neighbors has a boiler more than twice the size of his, with just the same amount of radiation, and is burning more than twice as much coal as Mr. Bruce, and his neighbor is unable to heat his house, and has actually had to start up his base burner to keep warm in the cold weather. His neighbor's hot water plant was installed by one of the local dealers. Mr. Bruce says his boiler is very easily cared for. That on several occasions when he was compelled to be away from home for days at a time, his wife has taken care of the plant without any trouble. Mr. Bruce installed his plant himself at an expense of \$22.50 for a helper and three days of his own time.

Here's Another From Illinois. It is a Hot Water Plant With About 300 sq. ft. of Radiation.

H. O. Adams, Effingham, Ill., writes us he has used his heating plant for two winters, and is well pleased with it.

THE CAPTAIN SAYS OUR BOILER IS A WONDER, Never Saw Anything to Equal It.

Capt. John McWeeny, Commanding Officer at the Hyde Park Police Station, Chicago had a hot water heating plant installed some years ago, and the boiler never gave him satisfaction. So in the Fall of 1905, he took out the old boiler and installed one of our No. 67 Cast Iron Sectional Boilers. He says this boiler only burns one quarter as much fuel as he formerly used, and now he is able to keep his house thoroughly warm all the time, where formerly they frequently were unable to heat the house, no matter how much fuel they burned.

TESTIMONIALS—Continued.**Here's a Hot Water Plant With About 300 sq. ft. of Radiation.**

Paul W. Wing, Sandwich, Ill., has one of our hot water heating plants, and writes us that he is very much pleased with it. He says he can get up boiling water in his plant in a very short time.

Here's Another Chicago Plant. It Makes Perpetual Summer.

Jas. Clark, 161 N. Avers Ave., Chicago, Ill., has one of our hot water heating plants in his cottage, 300 feet of radiation. He says it is all he could desire, very economical in the use of fuel and he can keep his house at a summer temperature in the coldest weather.

Here's One From a Minister. The Church Saved Considerable Money by Purchasing the Heating Plant From Us.

Rev. L. L. Smith, Pastor of St. Paul's Church, Strasburg, Va., who has one of our No. 68 Steam Boilers and about 270 feet of radiation in the Parsonage, writes that the plant is giving him excellent satisfaction, both in the comfortable heating of the parsonage, as well as low cost of fuel.

This Iowa Attorney is Well Satisfied and He Saved Money by Buying From Us.

R. G. Howard, of Howard & Howard, Attorneys at Law, Jefferson, Ia., bought a heating plant from us in the Fall of 1904, and wrote to one of our other customers who inquired of him about the plant as follows:

"In reference to your favor inquiring about the heating plant purchased by me about a year ago from the **Chicago House Wrecking Co., Chicago, Ill.**, will say that I purchased the boiler, together with radiation and all other necessary material from the above firm, and my hot water plant was installed under my direction without the aid of a steam fitter, according to the drawings furnished by the Company. I used it during the winter of 1904-5, which, as you will remember, was one of the most severe winters in years, the thermometer at this place registering at one time about 35 degrees below. Notwithstanding the fact that the severe weather continued for an unusual period of time, I was able to heat my house to 72 degrees or better at all times and under all conditions. I have yet to find a heating plant which can be more satisfactorily or economically managed than this one."

Mr. Dick Says He Would Like the Opportunity to Individually Recommend Us to Every One Needing a Heating Plant.

H. Dick, Wholesale Milk Dealer, 382 West 14th St., Chicago, Ill., has one of our hot water heating plants consisting of a No. 67 boiler and about 400 feet of radiation, installed in accordance with our plans, and says the plant works perfectly, and is all he could desire in every way.

Here's a 60 Room Hotel in West Virginia. The Steam Heating Plant is Thoroughly Satisfactory.

We sold a steam heating plant for the Yew Pine Inn at Richwood, W. Va., Chas. D. Johnston, Proprietor of this Hotel. It is a fairly large plant, something over two-thousand feet of radiation, in about sixty radiators. We made up the working drawings from Mr. Johnston's building plans, and he installed the plant himself. He writes us as follows:

"The heating plant which I bought from you was just as you recommended, and is giving perfect satisfaction. Should I ever build again, will call on you.

Yours respectfully,

(Signed) Chas. D. Johnston."

TESTIMONIALS—Continued.

Here's a Plant in the Mountains of W. Virginia.

Ben K. Curtis, President of Manacea Water Company, New York City, bought one of our hot water heating plants with No. 67 boiler and about 400 ft. of radiation for his home at Independence, West Va. He writes us as follows:

"The Hot water heating plant purchased from you last fall for my dwelling at Independence, W. Va., has done splendidly notwithstanding the **house** exposed and rather openly built. We are delighted with our Heating Plant."

Here's a Hot Water Plant Using Coke for Fuel.

Mr. F. J. Ingram, Valparaiso, Ind., has a ten room house heated with one of our hot water heating plants. He uses coke for fuel, and says he has had no trouble whatever to keep warm at an average expense of \$9.00 a month. He has nearly 500 feet of radiation in his house.

Steam Heating Plant for Roanoke College. They Saved Several Hundred Dollars by Buying From Us.

We sold a steam heating plant to the **Roanoke College** in Danville, Va. There are about seventy radiators in the job. The building on account of change in floor level is a difficult one to heat, and is about 150 feet long, three stories high. The following letter is self-explanatory:

"The heating plant you planned and furnished for our building and which is installed has proven to be more than satisfactory. It is better than we had expected.

The asbestos came O. K., which completes all we have ordered from your house. I thank you for your prompt attention to this matter, and also the satisfactory way in which you made good all material that was damaged on the way to this place. We are able to heat the building to a much higher temperature than is required. One pound pressure usually heats the building very comfortably. Our boiler is one of the very best I have seen for the purpose. We saved several hundred dollars in getting the plant from your house.

Yours respectfully,

R. E. HATTON,

President."

Here's a Hot Water Plant in Missouri Burning Natural Gas.

Mr. S. R. Norton, Carthage, Mo., has one of our hot water heating plants in his eight room house, radiators in every room. They use natural gas for fuel. He says they have no trouble to keep the house as warm as they want it.

This Colorado Heating Plant is Giving Perfect Satisfaction.

E. S. Allen, Loveland, Colo., has one of our hot water heating plants in his twelve room house, radiators in every room. He says they have no trouble to keep the house warm, and he is very well satisfied with his plant. The house is on a farm and exposed on all sides.

This Hot Water Plant is Installed in Chicago.

Mr. T. R. Statham, 1555 West Huron St., Chicago, Ill., has one of our hot water heating plants with seven radiators in use for two winters, and says he keeps the house like summer all the time. His plant is very satisfactory.

TESTIMONIALS--Continued.

MILO M. BRUCE,
First Natl. Bank Bldg.,
Hammond, Ind.

OTTO J. BRUCE,
First Natl. Bank Bldg.
Crown Point, Ind.

BRUCE & BRUCE,
Attorneys and Councillors,
Hammond, Indiana.

Chicago House Wrecking Company,
35th and Iron Streets, Chicago.

GENLTLEMEN:—I desire to state that the Flue Brush for my boiler has arrived, and very much appreciate your considerations extended to me on this and various occasions.

Your company has been more than fair with me in the several transactions between us, and trust that I may be able to show my appreciation in the future.

It is seldom that one meets with the treatment accorded to me. I can hardly express my appreciation of the comfort which the No. 67 boiler gives to my wife and me. The more I see of heating plants and boilers the more strongly I'm convinced that it is without an equal in producing results. We always have our entire house comfortably heated, but of nights aim to let the temperature go down for sleeping purposes.

This is the third year for my plaint. My neighbor and I have bought a carload of the best grade of the Illinois Lincoln coal. We will each take about sixteen or seventeen tons, which will cost us less than \$38 each, put in the basement. This will more than run me for the winter and keep my hot water heater going all summer and for heating purposes this time next fall. The only way to get the best results is to buy the best grade of coal.

After the water is heated to the proper temperature to heat the house, I put in plenty of coal, and to hold the heat in the boiler as much as possible, sometimes throw a shovel or two of moist ashes on top and very little heat will be wasted. And another method of using coal economically, is to use one scoop full of egg coal (hard coal) when filling up the boiler with this soft coal, and this is the thing to do in the extreme cold weather if one wants to hold up the temperature during the night. The first thing to get good results is a boiler with a deep, narrow fire-pot, to hold plenty of coal, especially soft coal, and, secondly, to feed it properly. Some have the idea that it is more economical to only put in a little coal and have a high flame, but I have found that it is better to have a deep bed of coals and hold the heat as much as possible in the boiler. This is true for low pressure boilers, without doubt, for otherwise too much heat escapes through the chimney, and then, too, it requires too much attention to keep it fed.

Yours very truly,

MILO M. BRUCE.

STATE SOLDIERS' HOME, ERIE CO.,
DONNYBROOK, N. D.

Chicago House Wrecking Company,
Chicago, Ill.

GENTLEMEN:—I have not kept any account of the amount of coal consumed by the heating plant. We have used out of the same bin for both heating and cooking. The system is very satisfactory in every way. It is safe, convenient and economical, and has kept our house comfortably warm and at an even temperature all winter at a considerably smaller cost and with less trouble, and far more satisfactorily than a heating stove. This plant takes less coal per day than the stove I used last winter and it heats three times as much space, at the same time heating evenly all over the house both day and night. We have never had occasion to crowd the system to its full capacity. We could get twice as much heat out of it as we do, but we do not need it.

Yours truly,

E. T. SHERMAN.

STATE SOLDIERS' HOME, ERIE CO., OHIO.
Chicago House Wrecking Co.,
Chicago, Ill.

GENTLEMEN:—I am very much pleased with my hot water heating plant and No. 67 series, "Perfection" boiler, received of you this fall.

Very truly yours,

DR. CHAS. A. REESER,
Treasurer.

RUDY R. BLACK
Manufacturer of Brick—Dealer in Coal, Wood and
Kindling.

MOUNDS, ILL.,
Chicago House Wrecking Co.,
Chicago, Ill.

DEAR SIRS:—I have my heating plant working fine. It is the very thing for saving in coal. It cannot be beat.

Yours most respectfully,

RUDY R. BLACK.

ALEX. CALDWELL
Dry Goods and Groceries
Iron Block
PEWAUKEE, WIS.,
Chicago House Wrecking Company,
Chicago.

DEAR SIRS:—The hot water heating plant bought of you has been doing duty in my dwelling since January 20, 1908. My house is a 10-room frame, 2-stories high. We heat every room in the house and the rooms have never been cold since we started the plant.

The boiler appears to be up-to-date as a heater, and the radiators are smooth and easily bronzed. On the whole, it is a very good system.

Respectfully yours,

ALEX. CALDWELL.

CHICAGO, ILL.,
Chicago House Wrecking Company,
Chicago.

GENTLEMEN:—I thought it only proper to tell you how pleased I have been with the hot water plant I purchased from you last fall. I would have written you sooner on this subject, but have been waiting until I could give the apparatus a fair trial and now find it to be perfectly well.

Friends of mine have visited and examined the plant and are surprised to see it work so well. I have especially one who has a hot water plant in his home but is not satisfied with his boiler, and he wishes to know the cost of one like I have—No. 65, as he would like to purchase one.

If you will kindly do this favor it will be appreciated by both him and me.

Yours truly,

11624 State Street.

M. ROUGERON.

ESTELLINE, S. D.,
Chicago House Wrecking Company,
35th and Iron Streets,
Chicago.

DEAR SIRS:—I have just received a letter from my son, Rockwell Sayer, informing me that the hot water heating plant that I employed you to plan in his residence at 2813 North 44th Avenue, Chicago, was installed in every way complete, and is very satisfactory. The workmanship is excellent and could not be made better. It is a success in every respect, for all of which myself and family are delighted and well pleased.

Please find my check for the sum of \$180, the balance due you as per contract, and to the whole amount I have paid you for the plant, please add my many thanks for the satisfactory manner you have finished the work.

Very truly yours,

D. SAYER.

REPORTS ON STEAM PLANTS.

PERU, NEB., April 19, 1906.

Kind of building: Dwelling.
What is it built of? A frame building on base-
ment.

Is it tight and warmly built? Yes.
Is it protected by other houses? No; exposed
to full sweep of north and west winds.

How many rooms? Twelve.

How many rooms are heated? Eleven.

What kind of heating plant? Steam.

How many months of the winter have you used
heat? Three.

How many tons of coal have you burned in your
heating? Eleven.

Have you used hard or soft coal? Soft.

Total expense of fuel: \$38.50.

Have you kept warm? Yes; all over the house.

PROF. HERBERT BROWNELL.

LAKE VIEW, IA., March 13, 1908.

Kind of building: Farm house.
What is it built of? Frame building.
Is it tight and warmly built? Yes.
Is it protected by other houses? No.
How many rooms? Ten.
How many rooms heated? Ten.
What kind of heating plant? Steam.
How many months of the winter have you used
heat? Four and one-half.
How many tons of coal have you burned in your
heating? Ten.

Have you used hard or soft coal? Soft.
Total expense of fuel: \$45.

Have you kept warm? Yes.
Our heating plant has given entire satisfaction,
and we would not have any other system of heating;
our house has always been warm, and we do
not have any dirt in the house, as we would if we
used the common heaters. And we have not had
half the work to do that we would have had if we
had used heating stoves. And then, there is no
danger of fire, as it would be impossible for a house
to catch fire with a steam heating plant if you
have a good chimney without any defects.

A. H. FRISBIE.

BEARDSTOWN, ILL., April 19, 1906.

Kind of building: Frame.
What is it built of? Brick foundation and wood.
Is it tight and warmly built? Yes.
Is it protected by other houses? No.
How many rooms? Ten.
How many rooms are heated? Nine.
What kind of heating plant? Steam.
How many months in the winter have you used
heat? Six months.
How many tons of coal have you burned in your
heating? About 25 tons.
Have you used hard or soft coal? Soft, mine run.
Total expense of fuel: \$48.
Have you kept warm? Yes.
The plant is very satisfactory.

CHULTZ, BAUJAN & CO.

BELLAIRE, MICH., March 13, 1908.

Kind of building: All wood.
Is it tight and warmly built? Yes.
Is it protected by other houses? No.
How many rooms? Eight.
How many rooms are heated? Six.
What kind of heating plant? Steam.
How many months of the winter have you used
heat? About five.

How many tons of coal have you burned in your
heating? Ten.

Have you used hard or soft coal? Soft coal.

Total expense of fuel: \$35.

Have you kept warm? Yes.
In regard to the boiler, will say that it has been
very satisfactory to us, and if I was buying a dozen
I would pick the No. 66 "Perfection," for it will
heat any dwelling and heat it right. But, I think
hard coal is the proper fuel, as we tried a little
when we first started it up, and I believe it the
cheapest fuel.

H. M. WILSON.

SIOUX CITY, IA., March 10, 1908.

Kind of building: Wooden frame, one and a
half stories.

What is it built of? Wood.
Is it tight and warmly built? Yes.
Is it protected by other houses? No; nearest
building is thirty feet away.

How many rooms? Seven.

How many rooms are heated? Six.

What kind of heating plant? Steam.

How many months of the winter have you used
heat? Five months.

How many tons of coal have you burned in your
heating? Six tons.

Have you used hard or soft coal? Soft, Illinois.

Total expense of fuel: \$44.

Have you kept warm? Too warm.

I started the heating plant October 20th, and
it has not been out since. The plant is ideal in
every respect; it is economical, and the boiler is
the best in Sioux City.

My boy, 12 years old, has tended the plant all
winter and he keeps fire and steam all night. He
uses a No. 2 shovel with the sides turned up. He
shakes the fire in the morning, puts in four of these
shovels of coal, two at noon and two when he
returns from school in the evening, and at bed-
time he puts in five more, and the steam is always
at three pounds, day and night.

The plant is ideal and perfect. I am a locomotive
engineer and know what I am talking about.

I taught him how to fire the plant.
You can refer anyone to me and I certainly will
recommend your plant and boiler, the finest of
anything in the market.

I will send you a list of names later. I may go
into the steam heating and hot water business
here, and if I do I will purchase from your company.

Yours respectfully,

F. L. HAMMER.

WATERLOO, IA., March 11, 1908.

Kind of building: Frame.
Is it tight and warmly built? Yes.
Is it protected by other houses? It is not.
How many rooms? Ten.
How many rooms are heated? Ten.
What kind of heating plant? Steam.
How many months of the winter have you used
heat? Two and one-half.
How many tons of coal have you burned in your
heating? Two tons soft and one ton of coke.

Total expense of fuel: \$20.50.

Have you kept warm? Yes.
I have been well pleased with the plant; it has
given me no trouble at all. I had one man to help
me to put in the plant and we had no trouble at all.

J. E. LAMB.

GREEN RIVER, WYO., March 11, 1908.

Kind of building: Business house.
What is it built of? Concrete blocks.
Is it tight and warmly built? Yes.
Is it protected by other houses? On one side.
It is a corner building.
How many rooms? Thirteen.
How many rooms are heated? All.
What kind of heating plant? Steam.
How many months of the winter have you used
heat? Two.

How many tons of coal have you burned in your
heating? Eight tons.

Have you used hard or soft coal? Soft.
Total expense of fuel: \$34.

Have you kept warm? Yes.

J. E. IRVINE & CO.

NAVARRE, OHIO, May 2, 1907.

Kind of building: Dwelling house.
What is it built of? Brick.
Is it tight and warmly built? It is.
Is it protected by other houses? No.
How many rooms? Ten rooms.
What kind of heating plant? Steam.
How many months of the winter have you used
heat? Seven months.

How many tons of coal have you burned in your
heating? Six tons.

Have you used hard or soft coal? Soft coal.

Total expense of fuel: \$15.

Have you kept warm? Yes.

MALCOM BOUGHMAN.

SELECTING THE PROPER SYSTEM.

You are going to install a Heating Plant of some kind. That is a foregone conclusion. It simply remains to make up your mind as to which system will best serve your purpose. There are three practical systems of heating in common use at the present time, HOT WATER, STEAM AND HOT AIR. It is, therefore, a matter of deciding on one of these three.

We are pleased to give you in the following a brief unbiased statement of the advantages and disadvantages of these various systems and you can judge for yourself as to which system you think will be best adapted for your particular case:

If you are looking for a heating plant for your residence and your residence is not unusually large, by this we mean a building containing over 15 or 20 rooms, by all means put in a hot water heating plant. It is certainly the best system you could possibly install, and especially our Mercury Heat Circulator System, which is positively the top notch of perfection in a system for heating residences. There is not a better system of heating known to engineering science at the present time than this Mercury System of heating and if there is a better system than this that could possibly be devised for heating an average size residence, it is yet to be discovered.

WHEN STEAM IS BEST

When the plant gets up into very large proportions, such as is the case when a very large theatre, church or hotel building is to be heated, hot water is not as practical a system as steam. For large buildings of this kind, where the plant has to cover very large areas, steam is the most practical system to use, owing to the fact that radiation in far-off parts of the building can be much more readily reached, and under these conditions, a steam system is the most reliable.

The disadvantage about a steam plant is that it requires much more attention than a hot water plant, and it is for this reason that we strongly recommend a hot water plant in preference to steam plant for heating residences. A 14-year-old boy can, without any trouble whatever, fully attend to a hot water plant, while it takes some little experience and practice to properly run a steam plant.

If the pressure in a steam plant goes down below a certain point, you will be burning coal in the boiler, and no practical results will be obtained in heating your rooms. The pressure has to be kept up to a certain point, and if the radiator is not filled with steam, you will not be getting any results, even though you are burning fuel in the boiler. You can get up heat quicker with a steam plant than you can with a hot water plant, but our mercury heat circulator system does away very considerably with the disadvantages in connection with hot water plants, and it reduces the volume of water required in the system, which means quicker results from firing, etc. A steam plant is more sensitive than hot water plant. It fluctuates more, and it is for this reason that it requires much more attention in order to keep the pressure to the proper point. Twice a day is often enough to look after your hot water plant, and our boilers being of special construction with a very deep fire pot, they will hold fire for 12 hours at a time without any difficulty whatever.

However, as we have already brought out in the above, steam, in spite of these disadvantages, is the best system to use when a large building is to be heated, for the simple reason that when a plant gets up into large proportions, as is necessary to heat a large building of this kind, there is much greater volume of water in the boiler and a much larger boiler and the plant is much less sensitive.

In other words, it is much easier to maintain a steady pressure without giving the boiler so much attention. Then again, on these large plants there is generally always a janitor or a fireman in constant attendance, while the plant is running, and under these circumstances, of course, the disadvantages of the plant requiring more attention are practically not to be considered and the great advantage which a steam plant possesses, that is giving quick results from firing, have more weight in this case than the actual attention required by a plant. It only takes about from 20 minutes to three-quarters of an hour, depending on the size of the plant, to have an entire building warmed up after the fire is first started with a steam plant, while in a very large hot water plant, it would probably take several hours to get the rooms heated up to the desired temperature.

In Church and Theater Buildings especially there are considerable periods of time during which there is no heat required and if the Building were heated with a hot water plant, it would be necessary to constantly maintain a fire in the boiler during severe weather to prevent the system from freezing up, while with a steam plant, the water can be drained out of the entire system and there will be no danger of freezing, even though there is no fire in the boiler.

REGULATION

When a steam plant gets down into a small size plant such as is necessary to heat an average size residence, the disadvantages of a steam plant outweigh its advantages to a very considerable extent. As we have already stated, it is a very difficult matter to secure steady regulation and especially to keep your rooms up to the full temperature over night. This disadvantage is, of course, overcome to the greatest possible extent by the use of our Diaphragm Regulator, which is sent out with every steam plant, and with the aid of this regulator you can have your rooms in the morning at least three or four degrees of what they were the night before; but the point which we wish to emphasize is, that these very failings of the steam plant are the strongest points of advantage in a hot water plant.

In other words, where a hot water plant shines out above all other is in the almost constant temperature which you can maintain in your rooms in all conditions of weather, and regardless of how sudden the temperature changes are outside, and it is really wonderful to think of what little attention a hot water plant actually requires.

To put it in another way, if you install a steam plant in your residence, you would not be in the least dissatisfied with the amount of attention that the boiler requires, as it really would not require much more attention than your heating stove that you are now using, but if you put in a hot water heating plant, you would certainly be surprised at the very little attention that it requires to run it, and we very strongly recommend a hot water heating plant for your residence. A hot water plant is the most economical in coal, the heat is not so intense and it has many other advantages which really have to be experienced to be appreciated.

Remember, we do not try to convey the impression that if you purchase a steam plant it will not give you absolute satisfaction in every way, but we do say that if you put in a hot water plant, you will be much more agreeably surprised at the results than you will with a steam plant. A hot water plant costs the most money, but we strongly recommend it in spite of this increased cost, and furthermore, we will guarantee that this increased first cost will be entirely made up for in a very short time in the saving which will be made in your coal bills.

As to the relative choice between these three systems of heating mentioned above, we would, of course, give a hot water first place, and a steam plant is certainly next to be preferred, and we would advise you a thousand times rather to put in a hot air furnace in your building than any heating stove manufactured at the present time.

THE GREAT ADVANTAGE

We have already brought to your attention the most important advantage of all of these systems, and that is the fact that the coal, ashes, dust, gas, etc., are all removed to the basement, and when these advantages are secured, this covers practically 75% of the actual advantages that are to be had from these systems, and while a hot air furnace cannot compare with a hot water plant or a steam plant as far as efficiency or convenience is concerned, we can certainly fit you up with a complete hot air furnace equipment that we will guarantee to give you absolute satisfaction in every way.

OUR FURNACES

Our furnaces which we handle are the best furnaces on the market at any price, and we do not know one point in their entire construction that could possibly be improved upon. We refer you particularly to the detailed description of these furnaces as given elsewhere in this catalog.

The great attraction which a hot air furnace has is its low cost, and in this particular feature a hot air furnace has the advantage of all other systems. We can furnish you with a complete brand new equipment including all the registers, hot air pipes, furnace, etc., at a cost that will really surprise you. In fact, the expense will not amount to much more than the cost of an ordinary heating stove, and by putting the plant in yourself and following our very simple instructions or plans, or getting some handy mechanic to do the work for you, you will be able to complete the entire installation at a very small figure.

It is only fair to say here also, that a hot air furnace really has one or two very striking advantages which are not to be found with the other systems, and that is, you can get up heat almost instantaneously after the fire is started, and also the heat can be just as rapidly checked if it is desired to do so. Where a hot air furnace really is most appreciated is in changeable climates and countries where the weather is not so severe.

WE CAN QUOTE YOU ON ANY OF THESE SYSTEMS STEAM HOT WATER OR HOT AIR

As we have already stated, the above is an unbiased statement of the relative advantages and disadvantages of these various systems, and we leave the matter entirely with you as to which system you want to install. We will cheerfully make you a proposition on any one of these three systems of heating, and we will absolutely guarantee any system that we furnish you, to give you the results as set forth in our specification to the fullest extent, so that you are taking no chances whatever in the matter.

We guarantee every plant we sell, and if you will let us know which system you wish to install and favor us with the necessary information which we will need in regard to the building, we can make you a complete proposition on your plant and you can rest assured that the price will be right.

SEND FOR OUR ESTIMATE.

Remember, you are under absolutely no obligations whatever to us for making you a figure on your heating plant. We are only too glad to figure up your complete plant and line up the entire proposition for you.

Get our information blanks first. These will post you fully on just what information is most important for us to have and it will avoid the necessity of corresponding back and forth. If you will carefully read over these blanks and answer all the various questions, we will be able to get our figures to you by return mail.

Remember, it is very important to answer all of these questions fully in detail, as it is very necessary for us to have all this information in order to make you an intelligent estimate. It is therefore important that none of these questions be slighted.

Make your sketches as complete as possible and then you can be sure of the radiation on your plant being figured right. It will avoid any possible chance of a misunderstanding in the matter. It is very important to explain in regard to the surroundings of your building. If your house is located on the open prairie with no houses around it, you will of course need much more radiation than you would if you were located in a city block. The size of the windows also have a very considerable bearing on the amount of radiation you will need and if these points are all fully covered, you can depend upon it that your plant will be figured exactly right in every way.

WHEN YOU SEND YOUR ORDER IN.

When you have received our estimate and found same to be entirely satisfactory and you send us remittance with acceptance, it will avoid considerable delay and time corresponding back and forth, if you will kindly advise us with reference to the following points.

FIRST—State fully in your letter whether you want us to send you the tools with order or not. We do not send the tools with the order unless we are requested to do so. The tools for an average heating plant range in price from \$15.00 to \$29.00 and when you wish us to send the tools with your heating plant, we add on to the amount of the order exactly according to the catalog prices of such tools as we send, and itemize invoice for same and as soon as you are through using the tools you return them to us and we will refund your money charged you for them less the return freight charges. We will not send the tools with the order unless you explicitly request us to do so in your letter.

SECOND—Do you want us to send you the plans for your approval. Unless requested not to do so, we always send the plans for approval. It means little delay on the order as the plans have to be approved of before the order is sent through and if you are in a very great rush and want to get your order shipped with all possible haste and would just as soon leave the matter of designing the plant entirely with us, you can state in your letter it will be satisfactory for us to ship the plant right out, and this will avoid any delay in submitting the plans for approval.

THIRD—State what bank you wish us to draw on.

FOURTH—State what road you want the plant shipped over.

FIFTH—IMPORTANT. Be sure to advise us if your station is a prepaid station or not. If there is no agent at your station, it will be necessary for us to send all the goods freight prepaid and if you do not inform us in regard to this, we are liable to make shipment without prepaying the freight charges, which would mean considerable delay with shipment reaching destination.

HOT WATER HEATING.

GENERAL PRINCIPLES.



THE basic principles on which an ordinary system of Hot Water heating works, is the physical law that when water becomes heated, it becomes lighter.

Referring to (figure 64), which shows a very simple system of circulation, it will be seen that when the fire is started in the boiler, the water getting heated will become lighter and, of course, will strive to get to the highest point. The colder water coming in at the bottom of the boiler, forces the lighter water to the top. The cold water going into the boiler becomes heated and the hot water going out of the boiler to theradiators becomes cold and of course returns to the boiler.

This is a continuous process and this circulation keeps constantly going on as long as there is any fire in the boiler.

This illustration represents the simplest kind of

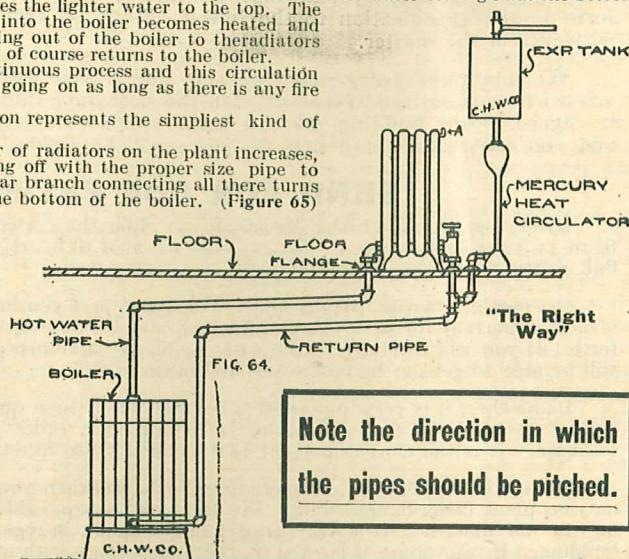
Hot Water system.

Of course, when the number of radiators on the plant increases, it is simply a matter of branching off with the proper size pipe to fit the radiator and carry a similar branch connecting all there turns and carry the return pipe into the bottom of the boiler. (Figure 65) and 66 shows how this system can be enlarged by adding more radiators and the way the pipe is arranged.

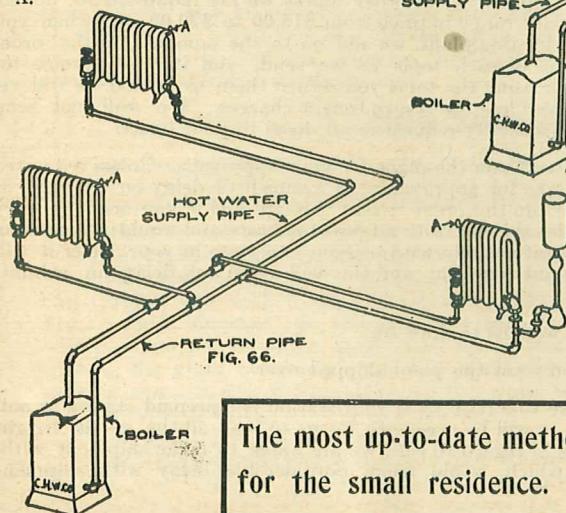
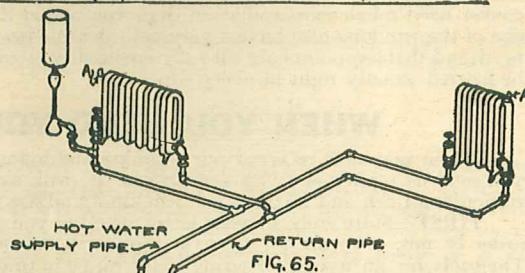
It will be understood of course that a system of this kind can be enlarged to almost indefinite proportions by simply adding on radiators as shown. The boiler, of course, and the size pipe always has to be enlarged accordingly and this has to correspond with the amount of radiation on the system.

It will be noticed that any of these radiators can be turned off without interference with the circulation of any of the others. This is the Standard two pipe system of Hot Water heating, and this is the system which we use exclusively. The only difficulty that is experienced in connection with Hot Water systems, that is when installing the system, is to get the pipes pitched properly. The purpose of pitching the pipes is to provide a slope, so that any air which forms in a system, will gradually find its way to the radiator.

It will be noted by examining these diagrams that any air which would form, would flow along the pipe to the highest point, and work its way into the radiator, and it could be liberated by opening the air valve, as shown at "A."



Note the direction in which
the pipes should be pitched.



A Hot Water
Heating Plant is
the greatest
comfort that
could be added
to any home.

The most up-to-date method of heating in existence
for the small residence. Send for our Catalog.

If this pipe were not pitched, or if it were pitched in the opposite direction, as shown in Figure 67, the air would collect at point "A," and it would stop the circulation of the water. This general principle is the only point in the entire installation of a hot water heating system that really requires any special care. If this is fully understood and carefully provided for, the rest of the work is simply a matter of cutting and threading the pipe and screwing it together, using the proper size pipe at the various places, as indicated on Blue Print which we send with each plant, and connecting same up properly as shown on these plans. We indicate all the pipe sizes in our Blue Prints and the order is filled in strict accordance with these plans, so there is no possibility of you making any mistake.

Figure 68 shows a complete sketch of hot water system, showing operation of the expansion tank, mercury heat circulator, etc., and Figure 69 shows a plan of this same plant, and after a little careful study it can be easily figured

just how these two correspond, and if you will carefully study these plans it will help you materially in getting the general principles of the pipe connections, as to how they should be installed, etc.

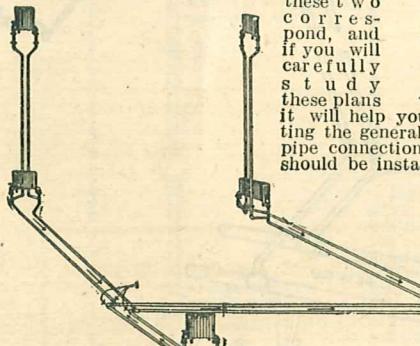
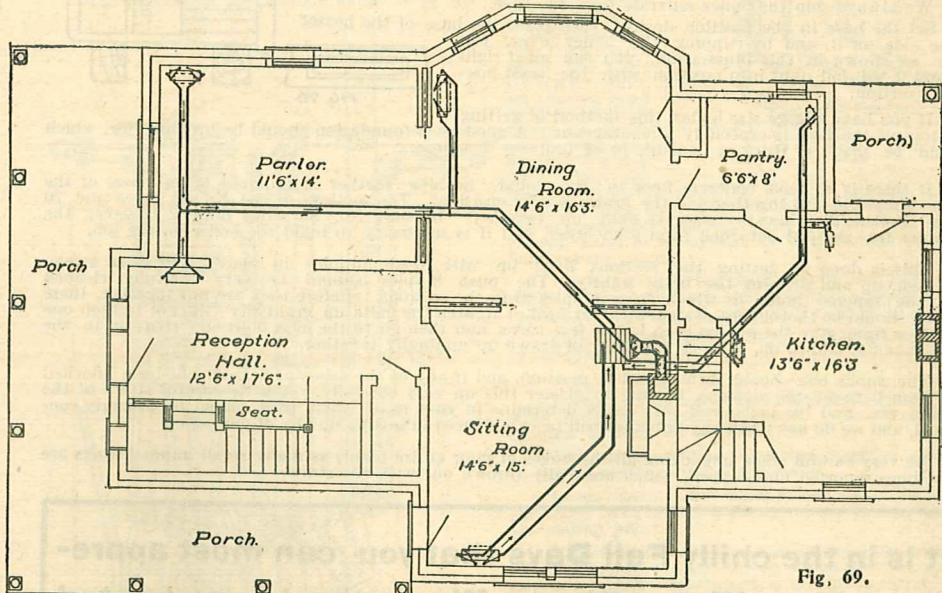
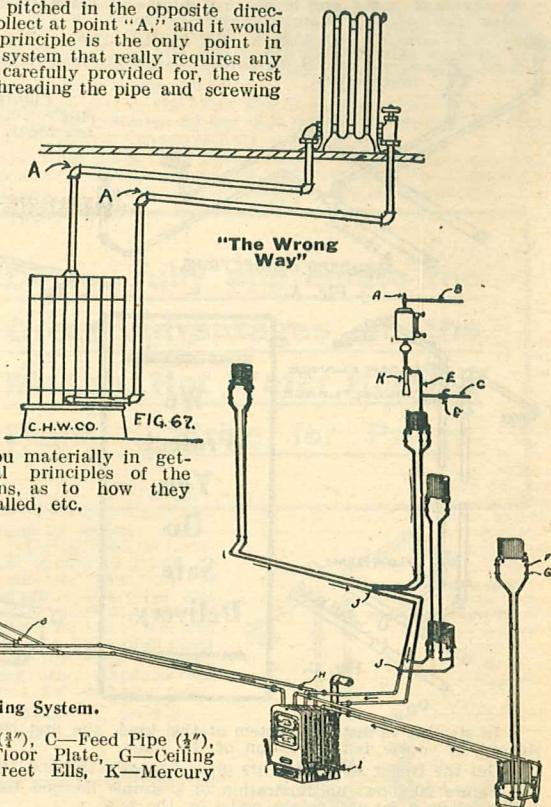


Fig. 68. Complete Hot Water Heating System.

Reference: A—Vent (1/2"), B—Overflow Pipe (1/2"), C—Feed Pipe (1/2"), D—Brass Stop, E—Expansion Pipe (1/2"), F—Floor Plate, G—Ceiling Plate, H—Unions, I—Drum Cock (1/4"), J—Street Ells, K—Mercury Heat Circulator.



Plan of Hot Water Heating System.

Showing location of boiler and radiators, and position of mains on basement ceilings. Second floor radiators are drawn in dotted lines. Pitch all mains down in direction of arrows about 1 inch to 10 feet. This is but a sample plan.

We give herewith a number of diagrams showing standing connections on the average Hot Water Heating System.

Figure A shows how two first floor radiators are connecting at the end of a line.

Figure B shows how two second floor radiators can be connected, located some distance apart.

Figure C shows how connections are made to a single second floor radiator from the mains in the basement.

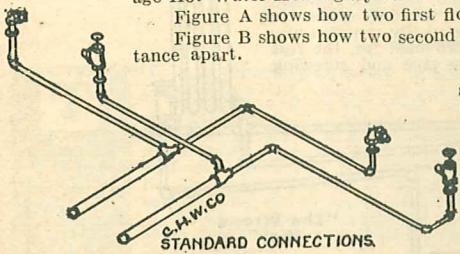


Fig. A.

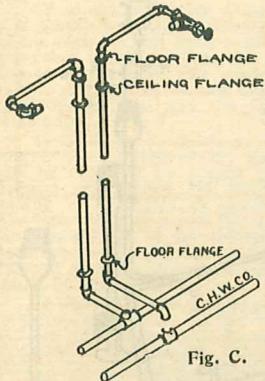


Fig. C.

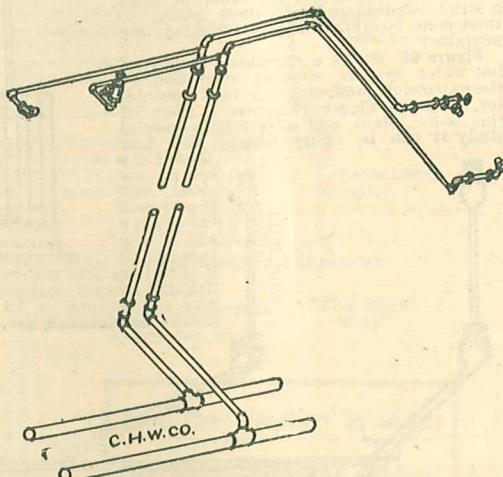


Fig. B.

In starting to install a system of this kind, the first thing to be considered, of course, is the location of the boiler.

Get the Boiler situated in its place properly the first thing you do.

Figure 70 shows an illustration of a simple method that can be very easily followed for getting the boiler on the base.

We always ship the boiler separate from the base.

Set the base in the position desired, then place the base of the heater along side of it, and by tipping the boiler over, this base as shown in this illustration, you can set it right up and it will fall right into position with the least possible exertion.

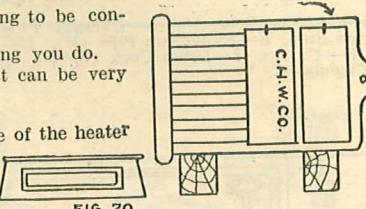
If you have a large size boiler, this method of getting the top on the base is especially advantageous. A good level foundation should be provided for, which should be made of Brick or Cement, or of ordinary concrete.

If there is a good concrete floor in the cellar, nothing further is required. The bases of the heater should be put together and the grates set in position. The sections of our No. 60 series and 70 series Boilers are always shipped built up together. In our No. 80 series Boilers, however, the sections are shipped detached from each other, and it is necessary to build the boiler on the job.

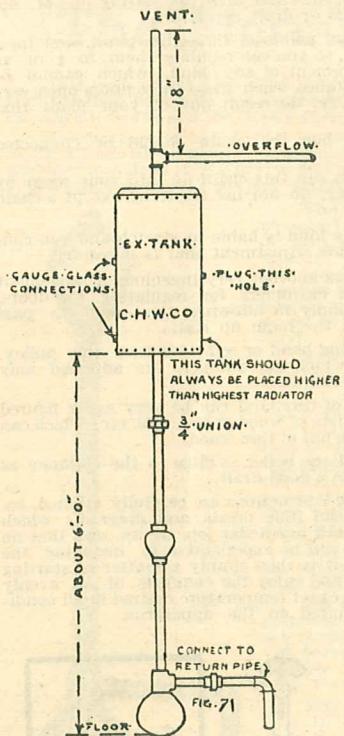
This is done by getting the sections lined up with push nipples in place, and then screwing them up and drawing the bolts tightly. The push nipples should be very carefully cleaned also the tapered holes in which these nipples fit in the sections. Before they are put together, these nipples should be thoroughly coated with red lead. Tighten the bolts up gradually—do not tighten one bolt at a time, give the nut on each bolt a few turns, and then go to the next bolt and treat it in the same manner, and so on, so as to get them all drawn up gradually together.

The smoke box should then be put in position, and if any of the asbestos cement has been knocked out from between the sections, be sure to plaster this up very carefully. A little careful study of the casting, etc., and the boiler will very easily determine in your mind where they should be properly connected, and we do not think any difficulty will be experienced in setting up any of our boilers.

Be very careful when unpacking all the boxes of your entire plant, as many small minor fittings are sometimes reported not shipped, which are really thrown out with the straw.



It is in the chilly Fall Days that you can most appreciate a Hot Water Plant. The entire house heated for twenty-four hours with one Shoveful of coal.



We follow these standard connections whenever possible.
We furnish with each hot water system, a hot water thermometer and altitude gauge.

Figure 73 shows view of one of our boilers with these fixings all attached.

The purpose of the altitude gauge is to tell when the system needs water.

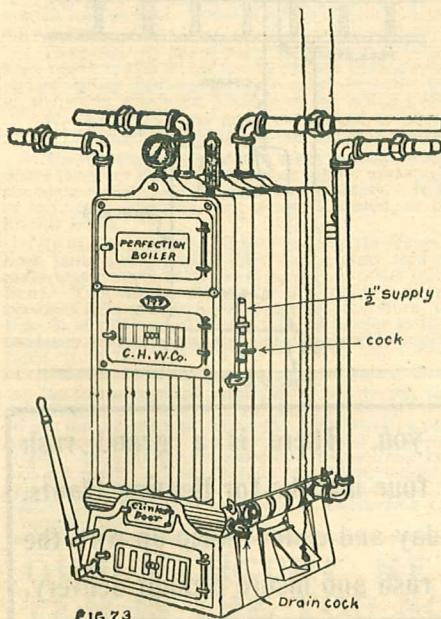


FIG. 73

Figure 71 shows a complete diagram view, showing the location of the mercury heat circulator system in its proper position.

We have given previous pages in this book, complete instructions with reference to using the stock of dies and other tools, etc., and with these instructions together with things explained of the general principles of hot water heating systems as given in this chapter, we hardly think any further instructions are necessary at this point.

As before stated, the exact size of each pipe and where it should go is indicated on our blue prints that we furnish with each plant, so that this can be very easily followed.

Also these plans show just where all the radiators are to be located; how the mains are to be run from the basement ceiling and each particular case receives special treatment.

**Do you fully appreciate the
Great Advantages of the
Modern Hot Water Heating
Plant. Write for Prices.**

Figure 72 shows a diagram view of how the connection should be made to the radiator when one is located above the other, and this is the standard connection which we use. We also give in the following, other complete diagram views, showing other standard connections for different cases.

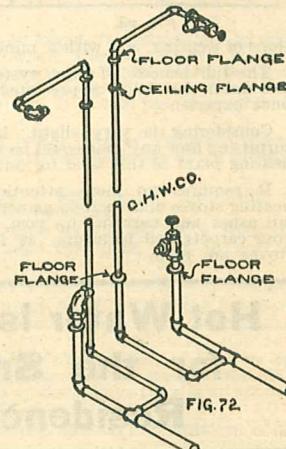


FIG. 72.

When the system has been filled to the proper point, set the red hand on the altitude gauge to correspond with the moving hand. Then when the water goes down into the system, and the moving hand turns back, you can turn more water into the system, and you will know when you have enough water in the system by watching the moving hand on the gauge.

When it gets to the point exactly opposite the red hand, you will know that you have enough water in the system, and you can turn the valve off.

This, of course, has to do with feeding the water to the system.

This will only be necessary about once a month.

There is no loss of water whatever in connection with hot water system, except whatever slight amount is lost by evaporation.

The purpose of the thermometer is, of course, to tell the temperature of the water.

In our mercury hot water systems you can raise the water to as high as 235 degrees which is far above the boiling point.

It is, of course, the pressure on the water secured by our mercury heat circulator, which permits us to get such a high temperature as this in the water, and this is the reason you can get such an increased efficiency by using this mercury heat circulator system of heating.

All We Ask Is
a Chance. Let
Us Make You
a Figure. Write
For Them Now.

Another very important point in connection with the setting up of hot water heating plant is the damper doors or draft regulators.

This is one of the most delicate points of the entire plant, and these doors should be very delicately adjusted, so you can regulate them to $\frac{1}{4}$ of an inch. If you use a cumbersome arrangement of any kind, which cannot be adjusted accurately to regulate the distance when these doors open very closely, when you desire to, you will not get the result out of your plant that you should.

Figure 74 shows a diagram view of how the chain should be connected with both the doors.

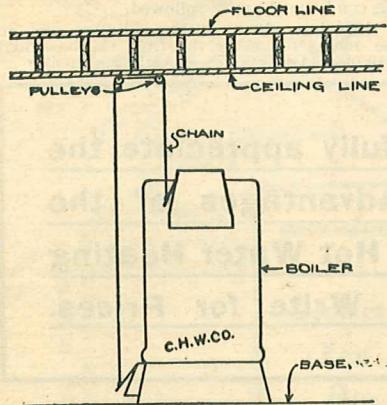


FIG. 74.

tions of weather, and with a minimum amount of attention required to the apparatus.

The full benefit of any system of this kind can never be fully appreciated until they are once experienced.

Considering the very slight investment, it is surprising how any one could be without a modern heating plant of this kind for one single moment.

It requires no more attention than ordinary heating stoves and there is no necessity of carrying out ashes and carrying up coal, etc., destroying your carpets and furniture, as is the case when stoves are used.

Hot Water is Best for the Small Residence.

Any further points, concerning which you desire further information which are not entirely clear to you, we will very cheerfully explain as fully as possible, and we are only too glad to give you every possible information.

When you get one of these Mercury Heat Circulator systems installed in your building, you can rest assured that you have the most modern and up-to-date system of heating known to engineers up to the present day.

If there is any better system, it is yet to be discovered.

If you wish to run this chain up into your room by means of a pulley, do not use anything except a chain for this purpose.

A string of any kind is liable to stretch and you cannot get the accurate adjustment that is necessary.

Figure 75 shows another very ingenious arrangement used by one of our customers for regulating the doors, which consists simply in allowing the chain to pass around a pulley in the room up stairs.

By having a dial hand or some kind on this pulley, the exact point at which the dampers are adjusted may be very easily determined.

An apparatus of this kind can be very easily figured out, it simply consists of wood pulley, dial, etc., which can be very easily made out of thin wood.

Be sure to get the boiler as close to the chimney as possible, so as to get a good draft.

If the foregoing instructions are carefully studied, together with the special Blue prints and diagrams which we send out for each particular job, we are sure that no difficulty whatever will be experienced in installing the entire system and it is then simply a matter of starting a fire in the boiler and enjoy the comforts of an evenly heated home to the exact temperature desired in all conditions of weather, and with a minimum amount of attention required to the apparatus.

We
Guarantee
It.

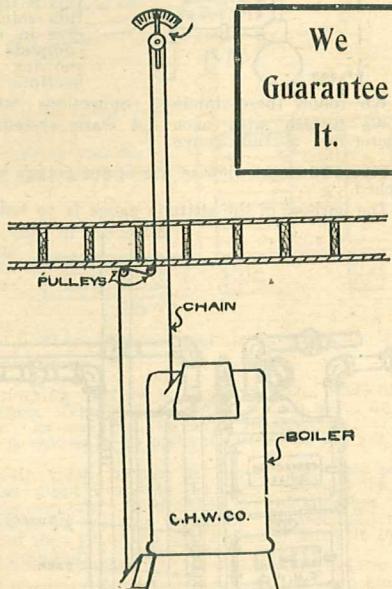


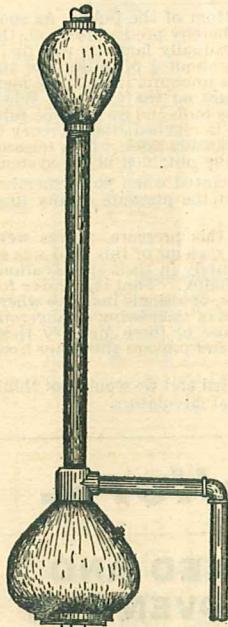
FIG. 75.

Place your order early. It will pay you. There is a grand rush every year during the last three or four months for Heating Plants. Our foundries are working night and day and cannot keep up with the orders. Place your order before the rush and insure prompt delivery.

The Mercury Heat Circulator.

This device is of such vital importance to the successful working of our hot water heating system, that it would be a very serious oversight if we did not give some detailed information of the principles on which it works and the theory of its operation in these pages.

The purpose of this device, as you are probably already aware, is to keep a pressure on the water in the system at all times. This pressure is maintained by a column of mercury about 20 inches high, which is contained in the device and as this column of mercury is always pressing upon the water in the system, this serves the purpose and gives us the pressure desired, which is about 10 lbs. to the sq. inch.



You will probably ask at this point, "But what is the object of this pressure? Of what advantage is it to the system? It is not equal in all directions? Therefore, how can it be a benefit to the circulation of the system?" We do not put forth any such ridiculous claim as to say that this pressure of 10 lbs. on the water directly forces the water through the pipes at a rapid rate. A statement of this kind would stand beyond the bounds of reason, as the pressure is certainly equal in all directions and there would be no direct motion produced in the water by this static pressure in itself.

What we do claim, however, is that this pressure operates in an indirect way to increase the circulation in the system, which we will explain later.

It is a well-known and established physical law that the temperature at which water will start to boil varies directly as the pressure upon the water.

Under ordinary conditions, there is no pressure upon the water except that of the atmosphere which is about 14 lbs. to the sq. inch, and water at this pressure boils at approximately 212 degrees Fahrenheit. If we increase the pressure on the water about 10 lbs., the water will not start to boil into steam until 235 degrees are reached and if we increase the pressure still further, the boiling point would be increased still further, and so on, all the way up to 240 or 275, etc., according as the pressure increases.

This law could hardly be demonstrated in a more practical way than the experience tourists have many times reported when traveling in very high altitudes.

For instance, mountain climbers have found it impossible to cook potatoes on top of a very high mountain where the atmospheric pressure was so slight that the water would boil at a very low temperature, probably 180 degrees or so, and this temperature, of course, being entirely too low to produce any effect whatever on the potatoes, it would be impossible to cook them.

This is simply a further demonstration of the law as explained above, that is, that the point at which water boils varies directly as the pressure upon it.

If you reduce the amount of atmospheric pressure on the water, of course, the boiling point will be reduced in proportion.

For instance, water in an absolute vacuum would boil at a comparatively very low temperature and it would take very little heat to get the water to change into steam.

These are the general principles which have been taken advantage of in our Mercury Heat Circulator.

You have, by this time, probably already surmised the great advantage which we get in a hot water system by using this pressure, which of course, means hotter water in the system and a much more efficient apparatus.

The water in our system does not boil until 235 degrees temperature are reached, so that we can keep much hotter water in the system throughout, we can get along with smaller radiators on the plant and get better results than it is possible to secure under the old open tank system, where there is no pressure on the water whatever, aside from the actual pressure of the atmosphere.

We get much more rapid circulation in this system. As before stated, this rapid circulation is due to the increased pressure in an indirect way which operates as follows:

The circulation of water in a hot water heating system, you understand, depends upon the fact that as water becomes heated, it becomes lighter and naturally the hotter water being lighter will seek to float to the highest point of the system immediately. In doing this, it allows more cold water to enter the bottom of the boiler which in turn becomes heated, so that this is a continuous process as explained elsewhere in this book.

It will be remembered that we heat the water in our system to as high as 235 degrees, where in the old open tank system, the highest temperature that can be reached is 212 degrees. In other words, we can make water much hotter as it leaves the boiler in our system than it is possible to do under previous conditions. This can be very easily understood; we raise the water to a much higher temperature, as water becomes lighter as it becomes hotter, therefore, the water is lighter in our system as it leaves the boiler than in any other. The water being lighter as it leaves the boiler means, of course, it will have a greater tendency to rise to the top than under old conditions. This tendency means no more or less than more rapid circulation. It will, therefore, be seen how this pressure operates indirectly to increase the rapidity of circulation in the system and it is for this reason we call this device a Mercury Heat Circulator.

As to the working principles of the device, this hardly requires any detailed explanation. You need never bother about it after the day you connect it with your plant. There are absolutely no working parts to get out of order in any way. Seventy-five per cent of the people who are using our system and have these Mercury Circulators attached to their plants know absolutely nothing about its working principles. They simply followed our instructions, connected it with their plant, left it to its own resources and got results. These people never experienced one bit of trouble with this device after it was once connected with their plant, and it would be good for years and years without the least attention. Simply follow our blue print carefully in connecting this Mercury Heat Circulator and we will absolutely guarantee results.

OUR MERCURY HEAT CIRCULATOR SYSTEM IS THE TOP NOTCH OF PERFECTION.

It sometimes happens, however, in unscrewing the plugs, that are always inserted in the openings, some of the mercury is allowed to spill out. In a case of this kind, it is necessary to add sufficient mercury to make up for any loss that may have occurred, otherwise, you would not get sufficient pressure on the plant nor the desired results.

There should be 54 lbs. of mercury in the bulb of this mercury heat circulator to get the right results. If you have spilled any of the quantity of this, the best scheme to follow is to unscrew the large round plug in the bottom of the bulb, hold it over a dish-pan and let all of the mercury run out, then weigh it carefully, and by subtracting the amount which you have from 54 lbs. you can determine how much it is necessary for you to add. After you have determined this, replace the large plug in the bottom of the mercury Heat Circulator and remove the small plug in the side, carefully pour the mercury in at this opening, including the amount you have added and after all the mercury is carefully poured in, replace this small plug and screw it in tight. You can then connect the Mercury Heat Circulator in the usual manner, being careful not to spill any of the mercury and we will guarantee results.

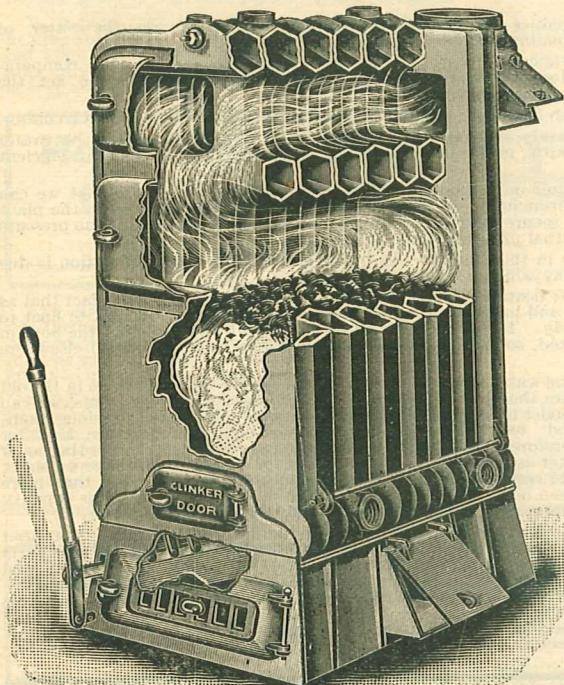
Under normal conditions, of course, the mercury rests entirely in the bottom of the bulb. As soon as the water in the system becomes heated, however, it starts to expand and thereby presses down on the surface of the mercury in the bulb, which having no other place to escape, gradually finds its way up in the small central tube, the end of which dips down in the mercury to within about $\frac{1}{4}$ of an inch of the bottom of the bulb. The higher the mercury climbs in this tube, the greater the pressure. When the mercury has climbed to the highest point, there is approximately 10 lbs. pressure on the system. When the pressure gets to over 10 lbs., it will, of course, force all the mercury out of the bulb and up into the tube and finally the water itself will start to climb in the tube. When this point is reached, the mercury is entirely displaced and a certain amount of water is allowed to escape to the expansion tank, which releases the pressure and absolutely prevents any higher pressure than 10 lbs. ever being obtained in the system.

The advantage of this device over valves of any kind can be readily appreciated when you remember that there is absolutely nothing to get out of order or become fastened so that the pressure at any time cannot be relieved.

Previous to the development of the mercury principle for maintaining this pressure, valves were generally used and the great risk which was incurred in placing these valves on systems of this kind was so strongly realized that many architects throughout the country forbid absolutely in their specifications the use of any valve in connection with the hot water heating system in the building. That is, a valve for the purpose of producing pressure on the system. We have yet to hear, however, of a single instance where one of these Mercury Heat Circulators have ever been ruled against on the ground of their being a dangerous improvement. There is absolutely no danger whatever connected with the use of these Mercury Heat Circulators in your plant, as it is impossible for the mercury to become fastened and prevent the water from relieving itself of an unduly high pressure.

We send these Heat Circulators out on every hot water heating system we sell and we would not think to furnish a hot water heating plant without including one of these mercury heat circulators.

Our Perfection Boilers.



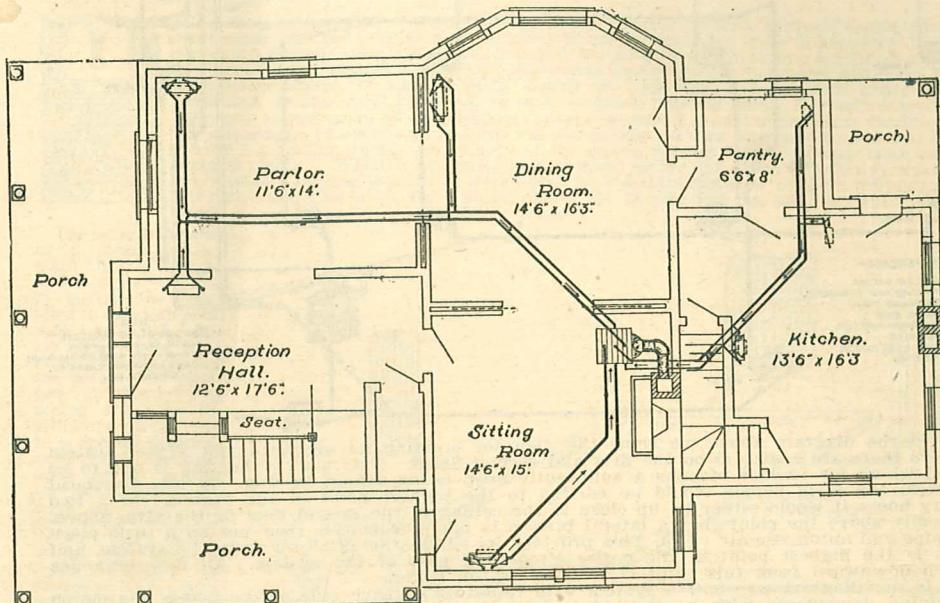
TRIED AND
PROVEN THE
BEST
RESIDENCE
HEATING
BOILERS
ON THE
MARKET.

The results of over 30 years constant experimenting and improving.

Every line in the design of these boilers has been developed by painstaking perseverance and hard earned experience.

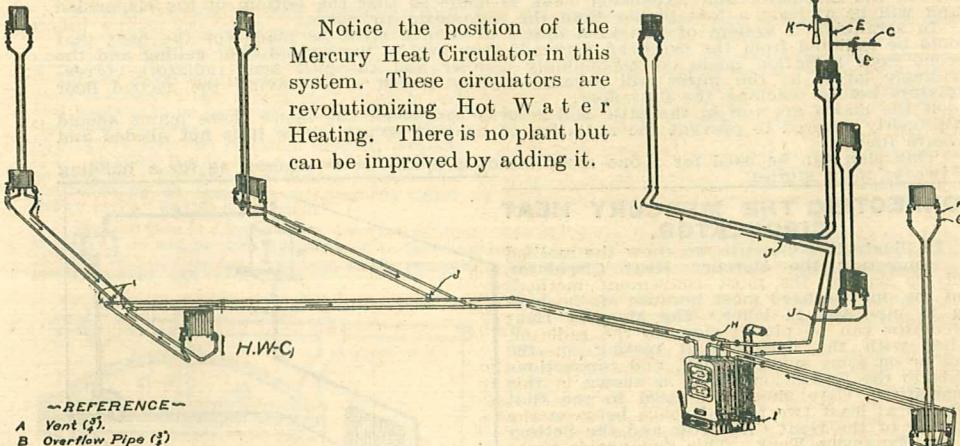
Designed Especially For Residence Heating.

PIPING PLAN FOR HOT WATER HEATING PLANT.



Showing location of boiler and radiators, and position of mains on basement ceiling.

Second floor radiators are drawn in dotted lines. Pitch all mains down in direction of arrows about 1 inch to 10 feet. This is but a sample plan. We will make a plan for you to fit your house, to give the best possible results. We indicate on our plans the right size of pipe to use from point to point.



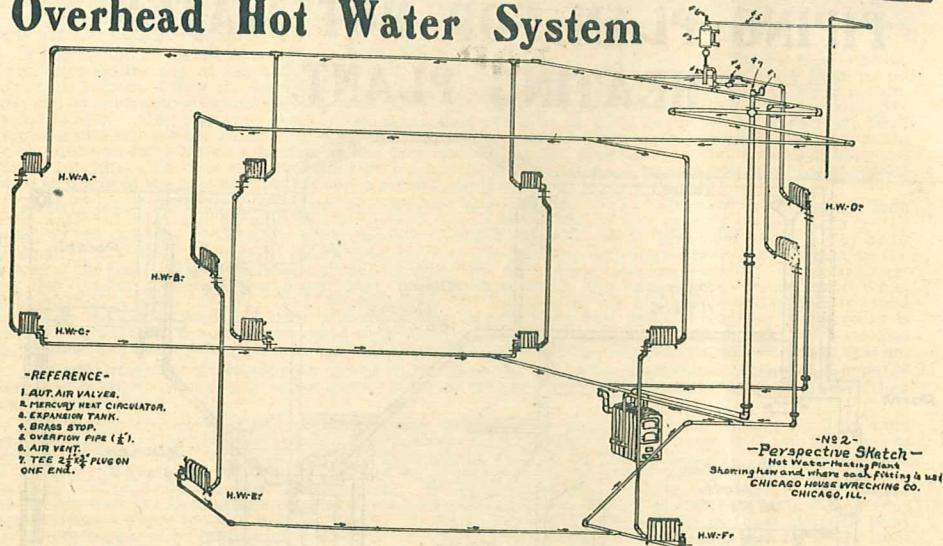
—REFERENCE—
 A Vent ($\frac{3}{4}$)
 B Overflow Pipe ($\frac{3}{4}$)
 C Feed Pipe ($\frac{3}{4}$)
 D Brass Stop.
 E Expansion Pipe ($\frac{3}{4}$)
 F Floor Plate.
 G Ceiling Plate.
 H Unions.
 I Drain Cock 1 $\frac{1}{2}$.
 J Street Ells.
 K Mercury Heat Circulator.

—Perspective Sketch—
 Hot Water Heating Plant.
 Showing How and Where Each
 Fitting is Used.

CHICAGO HOUSE WRECKING CO.,

—CHICAGO, ILL—

Overhead Hot Water System



In the diagram above we show the plan for erecting an overhead Hot Water system where there are radiators on the first and second floors. This plan of heating is one to be used where for various reasons a sufficiently deep cellar cannot be dug. In this Overhead System the main supply would be carried to the highest point of the system. In a two story house it would either be up close to the ceiling of the second floor or the attic above. Directly above the point that a lateral branch is taken from this riser put on a little piece of pipe and automatic air valve. This provides for elimination of all air from the system, and this is the highest point in the entire circulating part of the system. All flow branches pitch downward from this point clear back to the boiler.

In our diagram we show a system with radiators on each side of the house, the mains taken off from this point and dropping to the radiator on the second floor, going out of the end of that radiator and dropping into the radiator on the first floor. The radiator valve would be placed on one of these radiators and control the flow to both the radiators on that drop. The returns are collected either on the first floor or below the first floor, if this is possible, and carried back to the boiler.

The boiler should be lowered sufficiently so that these returns do not have to incline upward to the boiler, but that the pipe can have a steady pitch down and into the bottom opening of the boiler.

In putting in the Heat Circulator and Expansion Tank care must be used to get these placed so that the Expansion Tank will be higher than the circulating mains and where it will be protected from freezing, but it makes no difference if the expansion pipe is taken off this main and piped downward to put on the Heat Circulator, providing the connection between the Circulator and Expansion Tank is made so that the bottom of the Expansion Tank will be at least a foot higher than the automatic air valve.

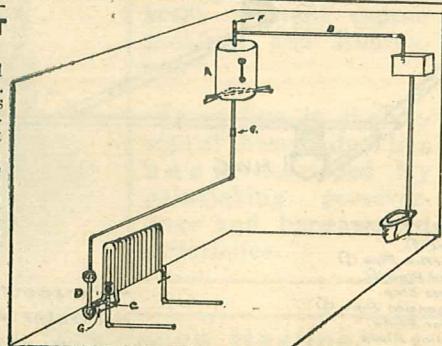
In arranging a system of this kind ample allowance must be made for the heat that would be radiated from the overhead mains if they are on the second floor ceiling and the second floor radiation made correspondingly smaller and the first floor radiators correspondingly larger as the water will become slightly cooled after leaving the second floor radiators before reaching the first floor.

If the mains are run in the attic and returns run under the house these mains should be properly covered to prevent the radiation of heat at points where it is not needed and to save fuel.

This plan can be used for a one story building in the same manner as for a building of two or more stories.

CONNECTING THE MERCURY HEAT CIRCULATOR.

In illustration opposite we show the method of connecting the Mercury Heat Circulator. This is one of the most convenient methods and the one we used most because of the saving in pipe and in labor. The Mercury Heat Circulator can be placed close to the radiator, either with the bottom ball resting on the floor or on some suitable shelf, and connections made to the Expansion Tank, as shown in this illustration. Care should be used to see that there is at least two feet of space between the top ball of the Heat Circulator and the bottom of the Expansion Tank. This distance is absolutely necessary for the perfect working of the Heat Circulator. The connecting of the Expansion Tank as we show it in this sketch is correct. The overflow carried to the top of the closet tank or it can be arranged to discharge into the lavatory. This can be arranged in any way so that the water that may boil out of it can waste in the sewer without damage. The points marked "F" is the vent and this should be left wide open. The object is that when the water is boiling out of the waste pipe "E" as soon as the force that ejects it from the system is spent, it will not siphon any more water out, but admit air from the point "F" and break this siphonic action.



STEAM HEATING.



IT HAS already been fully explained, that steam is the only practical means of heating under many conditions and it is the only system that can be depended upon to heat large buildings covering large areas. If you have a large hotel building to heat, or a number of stores in which it is only desired to keep up temperature during the day time, and just keep the temperature above the freezing point during the night time, a steam plant under these conditions is the most practical. Also in a church building where it is only desired to have heat at various intervals, steam is the most practical system under these conditions. The advantages of steam are, that you can get up heat on very short notice, and you can convey the heating medium to all parts of the system without the use of very large cumbersome piping. Where a hot water heating plant shines out above all other systems is in a residence heating plant; but after a plant gets up into any kind of large proportions, it is better to decide in favor of a steam plant. It is practical to use hot water as a means of heating up to a twenty-room house.

The basic principles of a steam heating plant are very simple.

It simply consists in having the boiler filled to a certain point with water and keeping the water constantly boiling so that the steam will circulate up through the piping and keep the radiators always filled to a certain pressure, according as the steam cools off in heating the rooms and turns back to water, the condensed water finds its way back to the steam pipe and circulates around the basement in a properly arranged main steam pipe which terminates in the bottom of the boiler.

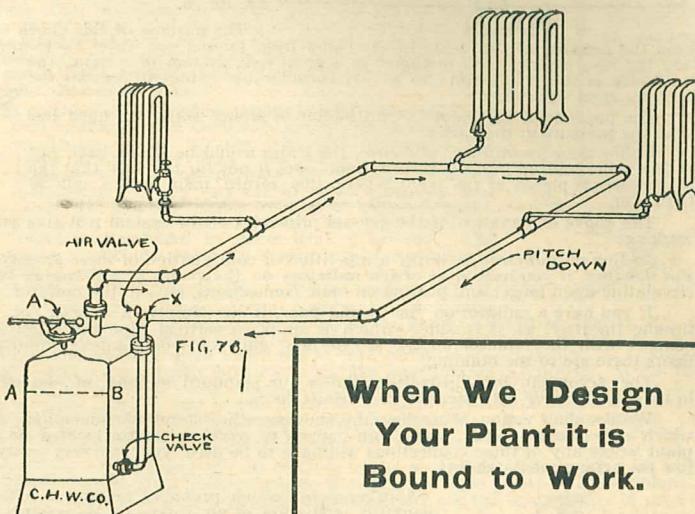
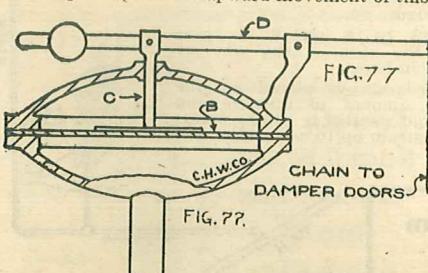
Figure 76 shows a very simple form of a steam heating plant, showing the principle on which it works.

It will be noted that the connections to the radiators are taken right out of the circulating steam main pipe with a branch pipe and connected right to the radiator in the most simple manner possible.

A valve is placed at each radiator so that each radiator on the plant can be independently controlled without interfering with the circulation in the system to any of the others.

By referring to this illustration, it will be seen that when the fire is started in the boiler, and the boiler being filled to the water line, "A" "B," as soon as the water becomes heated enough to develop steam, the steam will circulate and find its way up into the pipes and pressure will be developed, depending upon how much steam is generated, which in turn, depends upon how fast the fire is burning in the boiler. If it happens to be very cold weather, the steam will be condensing much more quickly than it will be in the milder weather. This will, of course, mean that it will be necessary to generate much more steam in order to keep the radiators supplied properly. In the mild weather, the steam is not condensed so fast. In other words, it is not used up so fast, so that in mild weather, such a fast fire does not have to be kept up. The fire is, of course, regulated by the draft doors on the boiler, which are automatically controlled by an ingenious arrangement called an automatic diaphragm damper regulator. This is shown at "A" in this illustration.

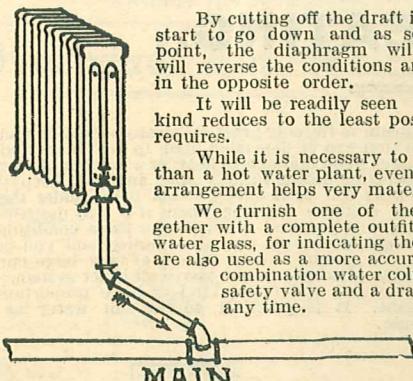
We also give in Figure 77 a separate sectional view of this regulator, showing the principle on which it works. It will be seen by referring to the diagram, that there is a rubber diaphragm, "B," between two bell shaped castings. As soon as the pressure in the boiler gets up to a certain point, this rubber is forced upward, and the upward movement of this diaphragm forces up the rod "C" which works the beam, "D," this beam being connected with a system of pulleys to the damper doors on the boiler it controls the drafts.



**When We Design
Your Plant it is
Bound to Work.**

When the pressure in the boiler gets up to a certain point beyond this reasonable limit, this rubber diaphragm forces the beam upward and closes the draft door in the bottom of the boiler and at the same time, owing to the arrangement of the pulleys, it opens the door in the back of the boiler and the draft is allowed to pass right up through this back opening and into the chimney, without passing through the boiler at all.

**We Take a Personal Interest
In Our Customers.**



By cutting off the draft in this way, the fire will immediately start to go down and as soon as it gets down below a certain point, the diaphragm will be drawn down again and this will reverse the conditions and the doors will be opened or closed in the opposite order.

It will be readily seen that an automatic arrangement of this kind reduces to the least possible the amount of attention the fire requires.

While it is necessary to give a steam heating plant much more attention than a hot water plant, even in spite of this automatic arrangement, this arrangement helps very materially to keep the plant properly regulated.

We furnish one of these regulators on every heating plant we sell, to gether with a complete outfit, including all the necessary trimmings, such as water glass, for indicating the height of the water line in the boiler; try cocks are also used as a more accurate test of the height of the water line and the combination water column, on which this water glass is connected; also a safety valve and a drain cock for blowing out the water in the boiler at any time.

We also provide a check valve to be placed on the return main as shown in Figure 76.

The purpose of this check valve is to keep the pressure of the steam in the boiler from forcing the water backwards and up into the return pipe. For instance, in a great long system of piping, the resistance of the pipe counts to a very considerable extent to prevent the pressure from equalizing.

The pressure at the point "X" in the line of piping would be much less than the pressure in the boiler.

Under these conditions, of course, the water would be forced back out of the boiler and up into the return main, were it not for the fact that the check valve is placed at the point where this return main comes out of the boiler.

The above explanation of the general principles of the system will give you a general idea as to the working.

Adding on radiators is simply a repetition or continuation of these arrangements as explained above. For instance, if you have nine or ten radiators on the plant, it will simply be a matter of making this circulating main longer and putting on more connections, etc., to the radiator.

If you have a radiator on the second floor, it is simply a matter of continuing the riser, as it is called, which is simply a vertical pipe and going up to connect with the radiator on the second floor and third or whatever number of floors there are to the building.

The accompanying illustration shows our standard method of connections in making the riser extensions to the various floors.

We also show various other diagrams showing other standard connections, all of which are self explanatory, and if you happen to have a radiator located on your plant where any of these connections will have to be used, you can very easily follow the arrangements shown.

Another point which probably requires a little explanation is the use of air valves on the system.

Under normal conditions, the entire piping system is, of course, filled with air, and when starting up the steam, it is necessary to get rid of all this air in the system before the effects of the steam can be felt.

Automatic air valves are always placed on each radiator and at various places in the mains, depending on how large the heating system is.

For an average size heating plant for an average residence, there are only one or two air valves required on the mains and one on each radiator.

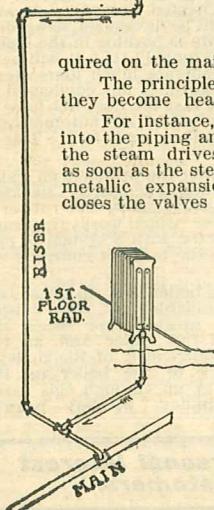
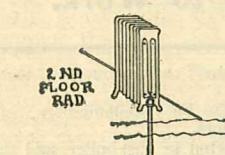
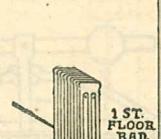
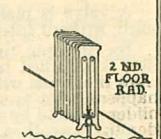
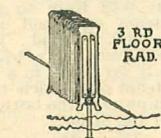
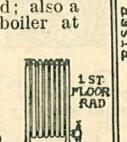
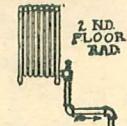
The principle of these air valves is that they always remain open until they become heated.

For instance, in starting up the fire, the steam usually finds its way into the piping and these air valves being open, under normal conditions, the steam drives the air before it out of the openings in the air valves, and as soon as the steam itself gets to the air valves, it heats up a small metallic expansion spring which becomes expanded from the heat and this closes the valves and prevents any steam from escaping.

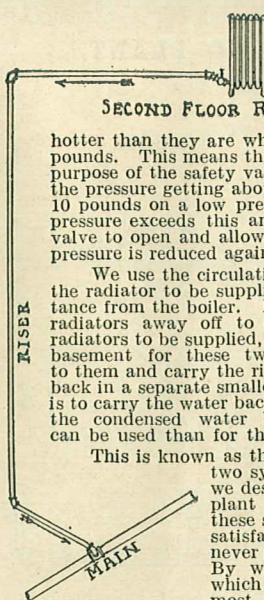
We always place automatic air valves at the end of each main, as shown in Figure 76.

We also provide elbows to be placed at these points with a tapping in the back so that the air valve can be screwed right in here.

The steam gauge which is always placed on the boiler, will determine the amount of pressure you are carrying and in real cold weather it will be necessary to sometimes get the steam up to as high as five or six pounds.



Standard Steam Connections.



Under ordinary conditions, two or three pounds will be all the pressure you will ever be required to carry. The temperature of steam, as well as water, increases directly as the pressure, and when you are carrying five pounds pressure, the radiators are naturally very much hotter than they are when you are only carrying two or three pounds. This means that they are throwing off more heat. The purpose of the safety valve on the boiler is, of course, to prevent the pressure getting above the safe point, and it is usually set at 10 pounds on a low pressure heating plant. As soon as the pressure exceeds this amount, the pressure causes the safety valve to open and allows a certain amount of steam to escape until the pressure is reduced again to the safe point.

We use the circulating main system in most all cases, except where the radiator to be supplied are located in groups at a considerable distance from the boiler. For instance, if we have to feed one or two radiators away off to one corner of the building and there are no other radiators to be supplied, we do not run the circulating main around the basement for these two radiators, we simply run two lines of piping to them and carry the risers up, and the water of condensation is carried back in a separate smaller independent pipe, the only purpose of which is to carry the water back to the boiler. As this pipe has to only carry the condensed water back to the boiler a very much smaller pipe can be used than for the steam main.

This is known as the Bleeder System, and it is either one of these two systems which we always use on our plants which we design, unless we are requested to design the plant along other lines. We absolutely guarantee these systems to work perfectly and give you absolute satisfaction in every way and to work smoothly and never give you any trouble from water hammering, etc. By water hammering is meant the cracking noise which is often heard in steam heating systems. The most important point to remember in installing a

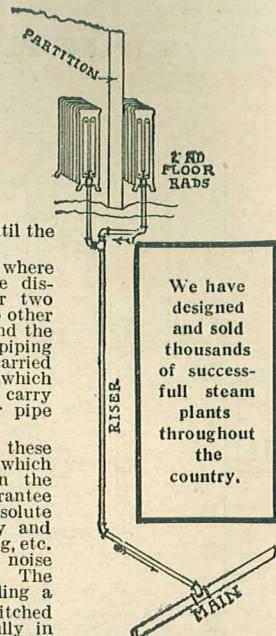
steam plant, also a hot water heating plant, is to get the pipes pitched properly. If you keep the conditions as brought out in these pages fully in mind, we think your own judgment will prevent you from making any radical mistake. It is simply a matter of connecting the pipe in the proper manner so that it will feed the radiator and at the same time any water which condenses will immediately flow back to the mains and find its way into the circulating main which will in turn carry this condensed water around and finally return to the boiler where it is reboiled into steam and the same process is repeated. It will therefore be seen that there is very little loss of water which occurs in a steam heating plant, as the water is constantly used time after time, and the only loss of water which occurs is what escapes in the form of steam around a leaky valve, etc., and it is only necessary to add very little water to the steam plant from time to time to keep up the proper working condition. This is always determined, of course, by the gauges and try cocks on the boiler.

The foregoing explanation covers practically all there is to the general ideas that are to be kept in mind in installing this steam heating plant. Of course we furnish exact blue prints with each plant and we advise you as clearly as possible in regard to the connections, so that you will know where to use every tee, elbow, etc., that we include in your order.

We advise you very strongly that you conform as strictly as possible to our blue prints so that the bill of fittings which we send can be used and you will have no cause to change this bill in any way. We realize the fact that there are probably thousands of different ways of installing a steam heating plant—all of which would give good satisfaction. Variations in the connections, however, will mean shortages on the order and you having fittings left over, which you do not need when you are through with the job. We recommend following our blue print plan to the letter. We, in all cases, figure liberally on the fittings and also on the pipe, and we give you a few extra in each case so that if you wish to change the location of a radiator one or two feet, you will have an elbow or a few feet of additional pipe to do it.

We indicate on our blue prints the exact size of pipe to use at each point so that it is almost impossible for you to go wrong in any way.

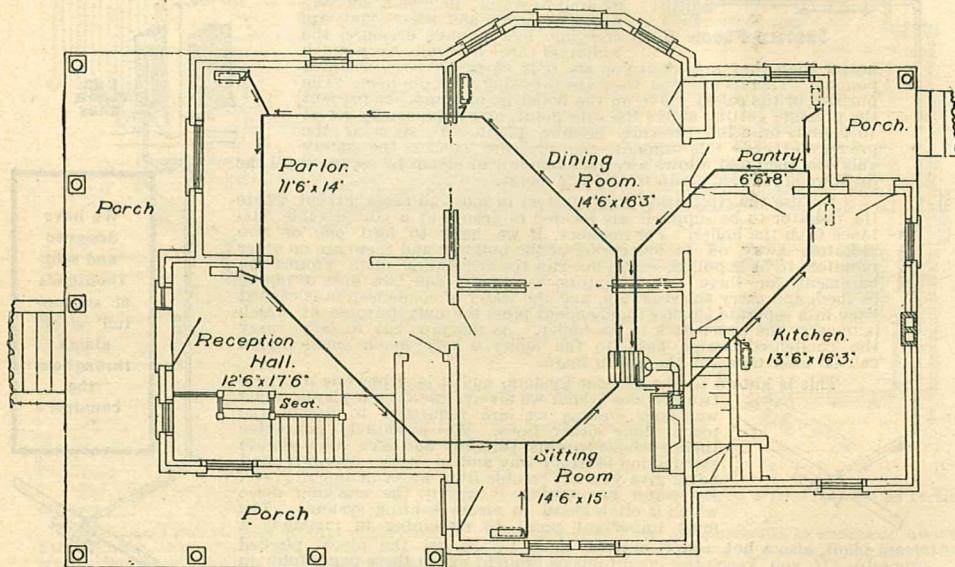
We also make up a set of diagrams which are necessary, covering particular conditions to be met with and special connections not explained in the foregoing and we give our customers the benefit of every attention possible in the installing of their plants.



We have designed and sold thousands of successful steam plants throughout the country.

SHOWING BLEEDER SYSTEM

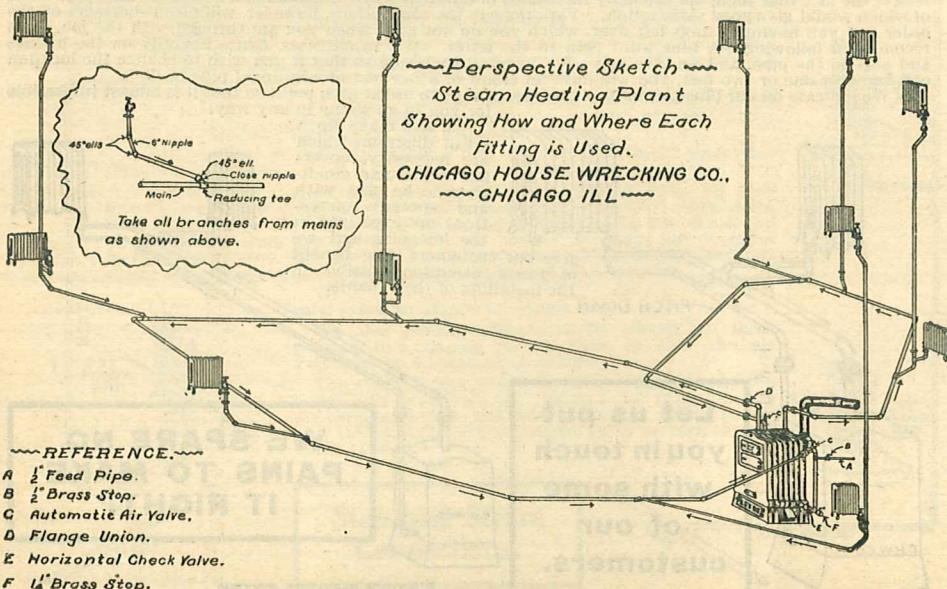
PIPING PLAN FOR A STEAM HEATING PLANT.



Plan for Steam Heating Plant, using return circuit main single valve system, showing location of boiler and radiators and position of mains on basement ceiling.

Second floor radiators are drawn in dotted lines. Pitch all mains down in direction of arrows about 1 inch to 10 feet.

This is a sample plan, but we will make you a plan that is correct for your house, and that will give the best possible results. We indicate on our working plans the size pipe to use from point to point.



IF YOU FAIL TO FIND IT LISTED, WRITE US. WE HAVE IT.

SUMMER CARE OF A HOT WATER OR STEAM HEATING PLANT

During the summer months when steam and hot water house heating apparatus is out of commission, it is worth while to consider, not only how they are to be kept from deteriorating during the period of disuse, but how such defects as they may have shown during the winter can be remedied before the next cold season makes

HOT WATER PLANTS. changes impracticable. In leaving hot water heating apparatus to take care of itself for the summer one thing is of great importance—not to change the water. Furnace men and heating contractors generally advise their customers to change the water in hot water apparatus at least once a year, and "fill up with nice clean water." This advice should not be followed for the very good reason that every filling with "nice clean water" causes renewed rusting and pitting of the inside of the pipes and boiler, which is avoided by not changing the water.

Furnace men do not know, so well as they should, and ordinary people do not know at all, the difference in its effect on iron pipes, of fresh water from that which has been heated nearly to boiling point. The difference is that the latter does not rust iron, while the former does. Unless water is contaminated with chemicals, any effect that it may have in rusting is due to carbonic acid gas, and, perhaps, to ordinary air dissolved in it. All water, by standing, absorbs air and carbonic acid from the atmosphere on it, and becomes corrosive; but by heating nearly to boiling point these gases are drawn out again and the water becomes non-corrosive. In hot water heating apparatus the fresh water first put in loses its corrosive quality as soon as it has once been heated, and so long as the water remains in the pipes and boiler it continues non-corrosive, except so far as it may, during the period of disuse in summer, absorb air and carbonic acid from the small amount of surface exposed in the expansion tank. Thus, although the water, after years of use, becomes discolored, the color does it no harm, and such water will have no injurious effect on the apparatus, while fresh water will immediately begin a corrosive action which will continue until the air in it has exhausted its power for harm.

If fresh water must be put into a hot water heating apparatus, as will be necessary after making repairs, the proper way to do so is, before drawing off the old water, to pour a pint or so of oil on the surface of the water in the expansion tank, which is always to be found at the highest point of the system. Lard oil or lubricating oil should be used. Kerosene is of little or no use. After the oil has been put on, the water may be drawn off by opening the stopcock at the lowest part of the boiler or other apparatus. As the water runs out the oil will follow it down through the pipes and radiators, coating the inside of them with a slight film, which will protect them from being attacked by the moist air left in the pipes, a corrosive agent as powerful as fresh water itself. After the repairs are made the apparatus must be refilled by pouring fresh water into the expansion tank, letting it find its way into the pipes and radiators until all are filled, and a fire should then be immediately built in the boiler, no matter what the temperature of the air in the house may be, so as to boil the air and carbonic acid out of the fresh water before it has had time to act much on the pipes.

With some waters, and with apparatus which, through neglect of these precautions, has become badly rusted inside, sediment collects in the lower end of the pipes, and may interfere materially with the circulation of the water. This is especially likely to happen with those forms of hot water heaters in which the water circulates entirely through small pipes, but the remedy is very simple, consisting in opening the lowest stopcock for a moment, and allowing the sediment, which always settles to the lowest point, to be blown out by the pressure of the water above it, replacing, by filling at the expansion tank, the water that may be so wasted.

STEAM PLANTS. Steam house heating apparatus, unlike hot water heating systems, should have the water drawn or blown off at the beginning of summer, for the reason that the small quantity of water in a steam boiler absorbs air, and gives off dampness, both of which will corrode the pipes and boiler, while in a hot water apparatus there is little absorption of air, and the water with which the whole system is filled acts as a protection. The valves and gauges of the steam boiler should be looked to, and, as in all heating apparatus, the smoke pipe should be taken down as soon as the fire is allowed to go out for the season, thoroughly cleaned and put in a dry place. Then any repairs or alteration that may be necessary should be made, while the circumstances are fresh in mind, and while such work can be done without the annoyances incident to having steam fitting done in the autumn rush. (From *Every Day Housekeeping*.)

OUR PROPOSITION

"A HEATING PLANT FOR YOUR RESIDENCE."

What do those words mean to you? Do they present a picture to your mind of comforts entirely beyond your means; a luxury which you, with only one or two hundred dollars to lay out, cannot hope to enjoy?

That is the impression that 90% of the people throughout the country owning small homes and of average means receive, when the word, Heating Plant, is mentioned.

We know this to be a fact with the experience that we have had.

We have had hundreds of people come into our office on some entirely different mission than looking for a heating plant, probably being attracted by our very low prices which we are putting out on our lumber and building material, etc., and when we incidentally mentioned a heating plant to them for their new building, the reply would be universally the same. "A Heating Plant! That is out of the question entirely; the price would be so high that we could not even think of it."

Why is it that so many people have this wrong impression? Where does it originate?

THE ANSWER

The problem is simple.

Call up your local dealer or drop him a line and have him give you an estimate on your plant and you will get the answer to this problem by return mail. THE PRICE, "That's the answer."

Is it any wonder that people should entertain wrong ideas in this matter? Why is it that your local dealer demands such exorbitant prices for his material? Is it because his material is any better? That is a question which you yourself can decide.

You probably know of several parties in your town who have had their plants installed by the local man; get in touch with them, then drop us a line and let us put you in touch with some of our customers; maybe we can find one in your own neighborhood whom you can call on, and we will guarantee our plant to equal, if not out-class, both in design and quality of material, the heating plant installed by the local dealer at every point, and we leave it with you to be the fair judge in the case.

IT STANDS TO REASON

Does it not stand to reason that we, with our immense working capital, having enormous quantities of radiators and boilers constantly manufactured and keeping the foundries working the year around, and then hardly able to fill our requirements, is it not evident that we, by selling the material direct to you and not through several different agents, can quote you lower prices than your local dealer who sells you material which has probably already been turned over several times and a profit realized in each case? Is it strange that we can almost cut his price in half?

WE LOAN YOU TOOLS

In lining up our proposition on our heating plants, we realize the importance of furnishing our customers with the necessary tools to do the work. It would be a very great expense if you had to go to work and lay out the necessary money to cover the cost of the tools for installing your plant, when you would probably only use them once and then have no further use for them, and to accommodate our customers, we have decided to make the following proposition:

When you place an order with us for a heating plant and mention that you want us to furnish you with the tools, we send them along with the order C. O. D. for whatever they amount to. They are invoiced separately on the bill and you can tell just what they cost, and then when you are through using them, you pack them up and turn them over to your freight agent and bill of lading is made out for them. Mail bill of lading to us, and immediately on receipt of this bill of lading,

we will put a voucher through our office. Then on receipt of the tools, they are, of course, very carefully examined and if they are not damaged or broken beyond a due allowance for ordinary wear, we will refund your money in full.

We do not mean by this, that the tools must arrive in absolutely perfect condition. We realize that the tools will necessarily show more or less wear, but what we mean is, if a tool is broken so that it is unfit for further service, or there is an evidence of careless handling, or anything of that kind, we, of course, have to protect ourselves in this case. Occurrences of this kind, however, where tools are broken, are very rare.

WE MAKE YOU DRAWINGS

We furnish with every heating plant that we sell, a complete detailed blue print plan, showing the location of every radiator and just how the piping is run in the basement; where the boiler is located, etc., the size of each pipe is plainly marked on the plan and there is positively no chance whatever of your not understanding fully just how to use the material that we ship you on your order.

Furthermore, we furnish with each plant, a detailed set of instructions, covering the most important points and those points that are most difficult to understand.

The very secret of the tremendous success of our plants, we think, is to a very considerable extent due to the very complete instructions and our blue print plans which we furnish with our plants. The chances of your going wrong are about one in a hundred. Furthermore, you always have the privilege to correspond with us, and any point that is not clear to you, we will do all we can to explain as fully as possible.

OUR ENGINEERING STAFF

WE HAVE A LARGE FORCE OF EXPERT HEATING AND PLUMBING ENGINEERS constantly in our employ, whose entire time is devoted to the interest of our customers. When you order a heating plant of us, you secure the benefit of this highly skilled service. No rule of thumb methods go with us. We have this business down to an exact science and every radiator is figured to a fraction. When you purchase a heating plant of us, you can rest assured that you will have the right amount of radiation and the proper sized pipe in the right place, which is not always the case when you let the job out to a contractor who has never had the technical training required to properly figure up a plant of this kind. It requires scientific ability, judgment and experience to design a good heating plant and to figure correctly the amount of radiation required in any given building. The estimating is really the most important part of the entire work. If the plant is not properly figured, and if you don't have sufficient radiation in a given room to maintain the proper temperature, it would be better that you did not have the plant at all.

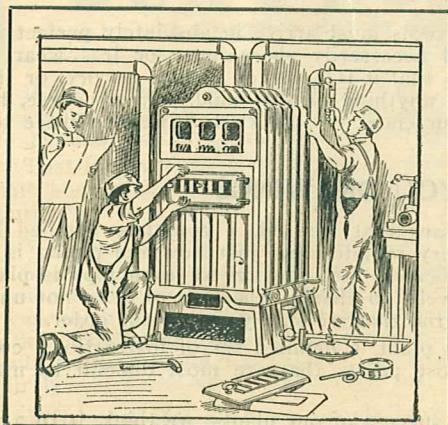
YOU CAN INSTALL IT YOURSELF

Did you ever stop to think what a great pleasure it is to do a job of this kind yourself and know that it will be DONE RIGHT? The actual work is mere pastime, it is so interesting. An averaged heating plant can be installed in about six or eight evenings, and then think of the extreme joy when the plant is all ready for the test and you turn the water into it and start the fire and then find that it works beyond your wildest dreams. It is much more pleasure, knowing that you did the job yourself, than when somebody else does it for you.

SAFE DELIVERY

We protect you absolutely on safe delivery of your plant, and should the radiators or the boiler or any of the castings become damaged in transit, all you have to do is to have your freight agent at destination make an acknowledgment of the fact and mark to what extent the item has been damaged and we will immediately duplicate your shipment and forward you a new radiator or whatever it may be, without delay, and you will be put to no inconvenience whatever in the matter, as we take the responsibility of the claim entirely on our own hands and we fight the claim through with the railroad company and see that proper settlement is made. All we ask you to do, is to have the freight agent mark an acknowledgment of the damage on the freight bill, when the material reaches destination.

PUTTING THE PLANT IN



above explained, will present just as nice an appearance in every way as if the pipes were concealed.

The heat that is given off from these upright pipes is not by any means entirely insignificant, and it helps out the radiators considerably in heating up the room.

IT'S A SIMPLE JOB

With most people, the matter of installing a plant is looked forward to with as much pleasure as a corn husking party and the fun is just as great. Putting up a plant is something you don't do every day. At every turn in the entire work, there is some new, tremendously interesting feature encountered, which requires a little careful thought and probably some continued discussion before it is finally solved, but surprisingly simple after all, and it is these new features that are constantly coming up in putting up a plant that makes the work so interesting.

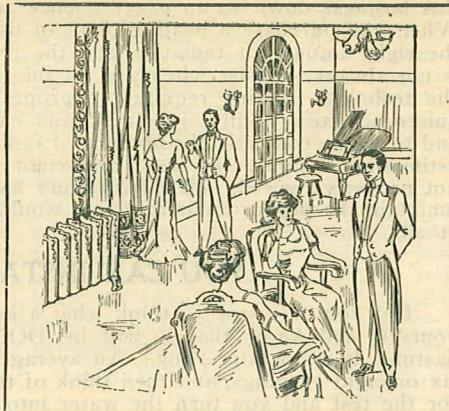
Cutting and threading the pipe is practically the most difficult matter encountered in the entire work, and is simple as turning a handle, and as our complete blue print plans indicate the exact pipe size to use at each point, it is simply a matter of cutting the size pipe required and to the right length, starting at the boiler and continuing around until the last radiator is connected up.

The great secret of the pleasure experienced in putting in a plant of this kind lies in the fact that it is an absolute diversion from your everyday line of work, whatever it may be. You may be a lawyer, doctor, business man or a professional man of any kind, and if your everyday line of work is along this line, the more interesting will be the work of installing the plant.

You would be really surprised, if you knew how many plants we sold to lawyers and doctors, etc., who do all the work themselves and consider it the finest opportunity ever offered for getting some good, substantial exercise, and after the plant is in, they feel the better for it.

If you do not care to do the work yourself, you can get in touch with some ordinary mechanic, and by overseeing the work, you will get just as good a job, in fact, a better job than you would if you let the contract out to some local plumber who has not had the scientific training and experience necessary in designing a heating plant and proportioning the pipe sizes, etc., and radiators as they ought to be and as they are shown on the plans which are sent out with every heating plant which we sell.

Few people realize what a simple matter it is to put in one of these Hot Water or Steam Heating Plants in a building, even though it is an old building, already built. It is not necessary to put the pipes inside the walls. You can get them run right outside in the rooms alongside of the radiators, and by arranging the upright pipes which lead to the second floor radiators close behind the radiators about 6 inches apart, it makes a very neat job, and if these pipes are gilded nicely, there is practically no advantage whatever in having the pipes inside in the wall, and a plant installed with these upright pipes outside the walls and gilded nicely, as



**COMPLETE HOT WATER HEATING
PLANT FOR SEVEN ROOM HOUSE \$167.70**
OUR MERCURY SYSTEM



Here is a sample of what we can do for you in a Heating Plant. This plant covers the requirements for an average sized residence of seven rooms. Everything on the entire plant is absolutely brand new and perfect in every way:

RADIATION

The radiation furnished on this plant is our brand new 38" three-column cast iron hot water radiation, of which there will be a total of 270 square feet. This radiation will be divided up among the various rooms of the house as follows:

FIRST FLOOR

Parlor,	15x12x9—1 radiator, 12 sections.....	60 square feet.
Sitting room,	15x12x9—1 radiator, 9 sections.....	45 square feet.
Dining room,	12x12x9—1 radiator, 9 sections.....	45 square feet.
Hall,	12x12x9—1 radiator, 9 sections.....	45 square feet.

SECOND FLOOR

Bedroom,	12x12x8—1 radiator, 7 sections.....	35 square feet.
Bedroom,	12x12x8—1 radiator, 5 sections.....	25 square feet.
Bathroom.	8x 8x8—1 radiator, 3 sections.....	15 square feet,

BOILER

The boiler we propose to furnish in this proposition is one of our No. 67 brand new cast iron Perfection Boilers, furnished complete with Hot Water Thermometer and Altitude Gauge and sufficient asbestos cement for covering same.

EVERYTHING COMPLETE FOR ONLY \$167.70.

This proposition includes absolutely everything to the very last detail that is necessary to completely install this entire plant in a first-class workmanlike manner, with the exception of the decorating bronze for the radiators and the smoke pipe connection between the boiler and the chimney; also complete plans for installing, and we back this plant with our absolute guarantee bond, which is furnished with every one of our heating plants.

MODERN HOT WATER HEATING SYSTEM

FOR THIS BUILDING ONLY
OUR MERCURY SYSTEM **\$207.50**



We can furnish this **Modern Building** with our **Complete Mercury System of Hot Water Heating, for only \$207.50.** This to include everything to complete the entire equipment with our Guarantee Bond and complete plans and instructions for installing; all material guaranteed absolutely brand new and perfect in every way. This is rather a large size residence, 22 ft. wide by 29½ ft. deep, exclusive of the porch.

RADIATION

The radiation we furnish on this heating plant at this price will be brand new 38 in. 3 column, cast iron hot water radiation, of which there will be a total of 340 square feet. We will distribute this radiation throughout the various rooms as follows:

FIRST FLOOR:

Dining room 1 radiator, 12 sections, 60 sq. ft.	Chamber 1 radiator, 10 sections, 50 sq. ft.
Living room 1 radiator, 10 sections, 50 sq. ft.	Chamber 1 radiator, 8 sections, 40 sq. ft.
Kitchen.... 1 radiator, 7 sections, 35 sq. ft.	Chamber 1 radiator, 5 sections, 25 sq. ft.
Hall..... 1 radiator, 8 sections, 40 sq. ft.	Chamber 1 radiator, 5 sections, 25 sq. ft.
	Bathroom 1 radiator, 13 sections, 15 sq. ft.

SECOND FLOOR:

BOILER

The boiler we propose to furnish on this heating plant is our No. 175 cast iron Perfection Boiler, which you will find fully illustrated elsewhere in this book. We furnish the boiler complete with Hot Water Thermometer and Altitude Gauge and all asbestos cement to cover same in a first-class workmanlike manner.

EVERYTHING COMPLETE FOR ONLY \$207.50

This proposition will include absolutely everything to completely install this heating plant, with the exception of the decorating bronze for the radiators and the smoke pipe connection between the boiler and the chimney. We also furnish with this outfit a bonafide Guarantee Certificate and complete set of Blue Print Plans for installing. Temperatures guaranteed 70 degrees in the living rooms and 60 degrees in the bed rooms.

We can furnish a complete Steam Heating Plant for this Building, for only 173:50.
We loan you tools free of charge.

Complete Up-To-Date Hot Water Heating System For This Entire Building

Price Only **\$243.74**



We can fit this modern residence out complete with our mercury system of Hot Water Heating for only **\$243.74**, including boiler, radiators, valves, piping, fittings and everything of every description necessary to complete the entire installation in first class workmanship manner. All material guaranteed absolutely brand new and perfect. This to include complete working drawings for installing and the plant is backed by our guarantee bond.

RADIATION

The radiation we propose to furnish on this plant is our brand new 38 inch two column cast iron plain radiators of the latest and most modern design. There will be a total of 390 square feet of radiation all told on the plant and we will distribute this radiation throughout the various rooms as follows.

FIRST FLOOR

Dining Room.....	50 square feet
Living Room.....	45 square feet
Kitchen.....	55 square feet
Chamber.....	45 square feet
Bathroom.....	15 square feet

SECOND FLOOR

Chamber.....	55 square feet
Chamber.....	45 square feet
Chamber.....	35 square feet
Chamber.....	15 square feet

BOILER

The boiler we propose to furnish you on this Heating Plant is one of our No. 176 cast iron Perfection Hot Water Boilers which has a rated capacity of 900 square feet of direct Hot Water Radiation.

We will furnish this boiler complete with a full set of hot water trimmings, including Altitude Gauge and Hot Water Thermometer and all the necessary asbestos cement to completely cover same, in a first-class workmanlike manner.

THIS COMPLETE MODERN HOT WATER HEATING PLANT FOR ONLY **\$243.74**

This offer you understand includes absolutely everything to complete the entire installation of this plant with the exception of the decorating bronze for the radiators and the smoke pipe connection between the boiler and the chimney. It also includes complete working plans and instructions for installing and the loan of the necessary tools, etc. and we will cheerfully give you every possible assistance so that you cannot possibly go wrong.

This plant is backed by our absolute Guarantee Bond and you are taking no chances whatever in the matter. Temperatures guaranteed 70 degrees in the living rooms and 60 degrees in the bedrooms; based on Chicago climate.

: OUR GUARANTEE BOND :

We show elsewhere in this book a fac-simile of our Guarantee Bond. This is a bona fide certificate of guarantee, and one of these certificates is furnished with every Steam or Hot Water Heating Plant which we sell.

365 DAYS FREE TRIAL

The substance of this bond amounts to nothing more or less than an absolute option to you for an entire year on your heating plant, and if, after giving our plant a try-out after one year, you find that it does not come up to our specification at every point and entirely capable of giving you the results which we claim, you can return the entire plant to us at our freight expense and we will refund the original purchase price.

THE PRICE

We positively guarantee the price of our plant to be lower than can be regularly secured from any other concern in the United States, considering the quality of material, amount of radiation, size boiler, etc., which we furnish on your plant. Don't let the matter of price which we quote you on your plant lead you to believe that there is something inferior about our material. We back every item on our entire heating plant, as far as quality is concerned, against any material of similar class on the market at the present time.

YOU ARE PROTECTED ABSOLUTELY

Remember, when you get our proposition on your Heating Plant and you send us your order, you are protected absolutely and on the strength of our guarantee bond you have the privilege to return the entire shipment to our plant at Chicago and we will pay all return freight charges and refund your money; if, on opening up the material, you do not find our claims as to quality, etc., on your plant entirely justified, you can have your money back, if you want it.

You can therefore readily see that even though you are a thousand miles away from us, you have just the same protection as if you were right here yourself inspecting the material before you purchased it and seeing it loaded in the car.

OUR COMPLETE DETAILED SPECIFICATION

You have in your possession the complete detailed specification covering the entire plant and practically every minor item furnished on it. This specification is furnished with every proposition which we send out, and we have no desire to cover up even the most minute detail in connection with our plants. They are perfect beyond question to the very last fitting.

WE FIGURE LIBERAL

If you compare our price with any others that you may receive, please remember the great importance of considering the amount of radiation and the size boiler, etc., on which we have figured for your plant. We have adopted a very liberal system of figuring our plants, and if you have ever had any experience in running a plant, you will certainly appreciate our judgment in this matter. We would much rather lose an order any time than sell a plant which would not be satisfactory.

When we make you a proposition on a plant, you can rest assured that it is a plant that will be amply large for your requirements and one that you will never have to force, even in the most severe weather that you will experience in your climate.

WE KNOW WHAT OUR PLANTS WILL DO

How is it possible for us to put out such a broad guarantee on these heating plants, leaving the matter of installing entirely in your hands, even though you have never had the least experience in steam fitting or installing plants of this kind? You will probably wonder how it is possible for us to offer such a one-sided proposition as we do. The secret of the entire matter is confidence.

We have such absolute confidence in the merits of our plants and what they are capable of doing, that we consider the claims as advanced in our guarantee to be very mildly stated indeed. It is no guess work with us.

We know just what our material is and we do not hesitate to make just claims for it, and as far as the work of the plant is concerned, we know just what temperature you can expect in every room in your house, just as we know that two times two make four.

If you have written us for an estimate and filled out our blanks, you have given us the total square feet of glass surface in each room and we can tell from your plans the exact amount of wall surface that is exposed and we have the exact size of each room, and with this information in our possession, by application of proper formulas, we can figure out to a fraction the exact degree of temperature that you can expect with a minimum degree of temperature outside, and this depending upon the minimum temperature which you experience in your locality and which you furnish us with the information that we ask on our blanks.

AS SURE AS THE RISING AND SETTING OF THE SUN

Therefore, you can readily see that figuring according to this data, we know just what to expect from a given size radiator. Our expert engineers figure all this up very carefully, and there is absolutely no guess work whatever about the matter at any point on the entire plant. Even the most insignificant elbow on the system has been very carefully determined by the most up-to-date formulas in use for determining pipe sizes, etc., and everything is figured out to a scientific accuracy.

Operating under such a system, you can readily see that, after all, it is not a hard matter for us to give you such an absolute guarantee bond, as to what results you can expect from your plant, and successful working of your plant, after it has been designed under a system of this kind, is just as sure as the rising and setting of the sun.

OUR MERCURY SYSTEM

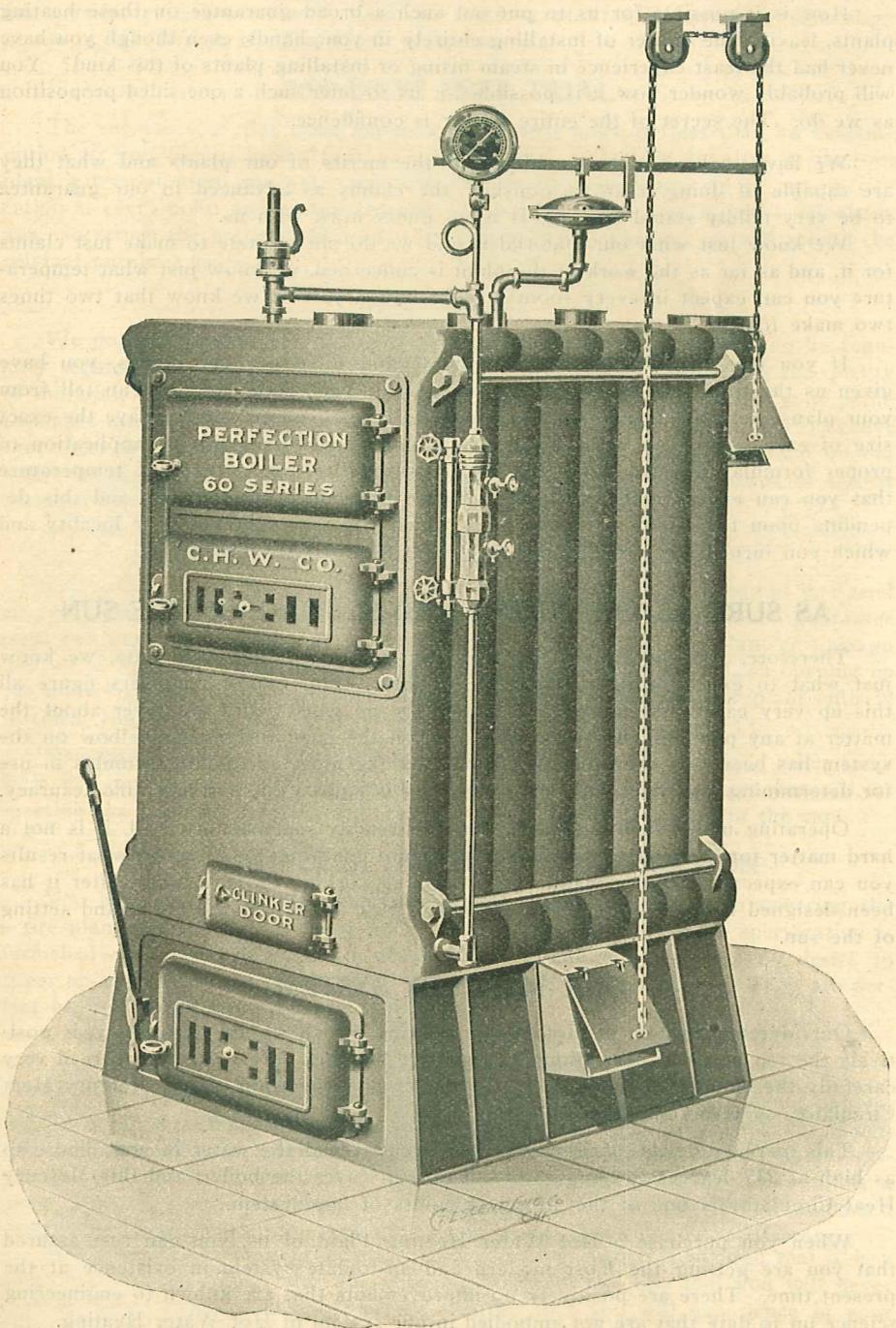
Our Mercury System of Hot Water Heating, which we use exclusively, is positively the top notch of perfection for residence heating. We want you to read very carefully the detailed explanation of the theory and operation of our Mercury Heat Circulator, as given on page 25 of this book.

This mercury device positively permits you to heat the water in your house to as high as 235 degrees in temperature, before it leaves the boiler, and this Mercury Heat Circulator is one of the strongest points of our system.

When you purchase a Hot Water Heating Plant of us, you can rest assured that you are getting the most modern and up-to-date system in existence at the present time. There are positively no improvements that are known to engineering science up to date that are not embodied in our system of Hot Water Heating.

OUR PERFECTION BOILER.

No. 60 SERIES.



OUR PERFECTION CAST IRON BOILERS.

It is only proper that we should here say a word or two in regard to our Perfection Boilers. The boiler is the very heart of the entire plant, and if the boiler is not right, the plant certainly will not be right.

You have probably heard a whole lot of affrightening statements made about cast iron boilers; the sections will crack and the nipples that connect the sections will rust out, etc., and numerous other catastrophes that are sure to take place, according to manufacturers of steel boilers, if you put in a cast iron boiler.

THEY NOW SELL CAST IRON BOILERS

If these are facts, why is it that these very same manufacturers have come out recently with a line of cast iron boilers? They simply had to. The public demand compelled them. The people know what they want and their judgment is generally infallible. It is results that count. If the cast iron boilers in use throughout the country were not doing excellent service and were not preferable to steel boilers, there would not be such a public demand, as compels these manufacturers to sit up and take notice, as they are now doing.

If you take a cast iron boiler and a steel boiler and put them both, one alongside of the other, each operating independent plants, it would not take a very long time to tell which was the superior boiler. It is a standing fact that steel is a substance which is very subject to rust. The same thickness of cast iron will last easily four times as long as the same thickness of steel, under any ordinary conditions, and especially under the very severe conditions which are met with in a heating boiler.

LITTLE CHANCE OF CRACKING

We admit that cast iron will crack, but we also maintain that a cast iron boiler, made up in small sections with flexible connections, so as to allow for the expansion and contraction, has very little chance of giving trouble from this cause. In fact, the chance is about one in one hundred, and after you once get your boiler set up, you have a boiler that is good for a lifetime, which is certainly not the case with a steel boiler.

The great trouble with steel boilers is that, owing to the intense heat of the fire, the connections at the end of the flues where they are corked against the steel boiler plate, are bound to deteriorate in a very short time and it will not be very long until you have a leaking boiler on your hands and one which will be a constant source of trouble and annoyance. Then it is a matter of putting in new flues, an expense of probably twenty-five or fifty dollars at least. Probably the shell of the boiler will stand for two or three sets of flues, but at the most about six to eight years is as much as you can ever expect out of a steel boiler and at the end of that time it is practically good for nothing but the scrap pile.

NO FLUES TO BE RENEWED

On the other hand, compare the cast iron boiler. You will never have to put in any new flues. There is absolutely nothing about the entire boiler that can possibly deteriorate. Cast iron is practically rust proof, and when you put the boiler up it is there for a lifetime. You may have to put in new grates or something of that nature once in a while, but aside from this minor expense, your investment is a permanent one and one on which there will be absolutely no depreciation whatever.

As far as the rest of the plant is concerned, the piping and fittings, etc., are of course not subject to such severe service as the boiler, where the intense heat is and they are certainly good for a lifetime.

Therefore, when you put in one of our plants, you can safely say that you are putting something into your house that will outlive your building.

A TWENTY-FIVE YEAR GUARANTEE

The great weakness of cast iron boilers, according to steel boiler manufacturers, is the connecting nipples. We have only one answer to this statement and that is, that we will not hesitate to give you an absolute twenty-five year guarantee on the nipples of your boiler, if you want it. If at any time within twenty-five years after

OUR PERFECTION BOILER.

No. 170 SERIES.



THE CLINKER DOOR

With the aid of the clinker door, it is possible to remove all dead coals or clinkers which may be in the bottom of the fire and too large to pass through the rocking grates. These clinkers can be removed bodily through this clinker door and this clinker door makes it practical to use such a deep fire pot, as we do in these boilers and does away with all disadvantages which such a deep fire pot might have; were it impossible to get at the fire underneath, as we are able to do with the aid of this clinker door.

THE ROCKING GRATES

Every grate bar in our boilers is mounted on an axis and connects with a common connecting bar underneath. This connecting bar is attached to a lever located at the side of the boiler, as shown in these illustrations and by operating this lever, every grate bar in the entire boiler can be made to rock and the top of the grate surface on which the fire bed rests is converted into a veritable grinding machine when these grates are being shaken and it only takes very little shaking of these grates to get all of the surplus ashes out of the fire bed and get the fire going with a bright red heat through the entire grate surface of the boiler. These grates positively prevent any dead corners in these boilers, as any ashes that might collect in these corners will always find its way down and once it reaches these grinding grates, it is bound to be discharged into the ash box.

THE REGULATING DAMPERS

All our Perfection Boilers are equipped with regulating check dampers located in such a manner that one damper counteracts the other and when connected on a chain system, they can be adjusted in such a way that when one damper is open, the other is closed, vice versa. This gives a maximum amount of control of the drafts and requires very little adjustment to increase or diminish the drafts to a very considerable extent, as may be desired.

WE FURNISH OUR BOILERS COMPLETE

When an order is placed with us for a heating plant, every item that is necessary in connection with the boiler is furnished complete. If it is a steam heating plant, we furnish complete steam trimmings, including cast iron combination water column, try cocks, water gauge, complete with guard rods, gauge cocks, pet relief cock, etc., and cast iron diaphragm damper regulator with rubber diaphragm, working beam, chain and pulleys for regulating the dampers; low pressure steam gauge, complete with siphon and pop safety valve. All of these trimmings are high-grade and guaranteed flawless and each is fully tested before shipment.

In the case of a Hot Water Heating Plant, we furnish the boiler complete with a straight Mercury Hot Water Thermometer and Altitude Gauge, with a red hand indicator, which can be set at the proper point where the system is found to be full.

CONNECTING PUSH NIPPLES

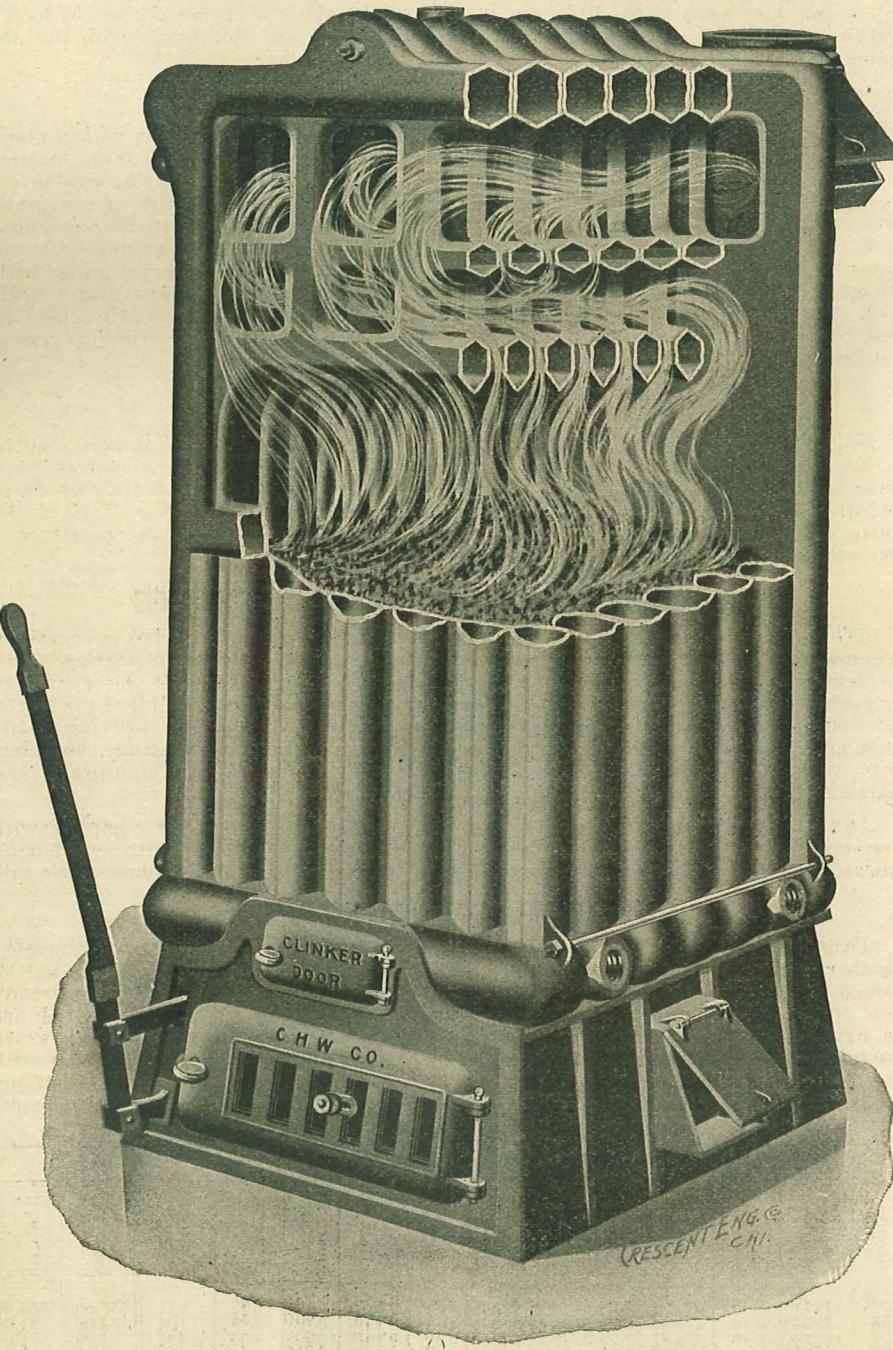
Every one of our cast iron boilers are assembled and the sections are connected together with zinc coated push nipples of proper taper and size to exactly fit the reamed tapered holes in the castings. These tapered push nipples, as has already been mentioned are fully $3\frac{1}{4}$ " deep away from the fire and the heat from the fire can never come close enough to have any effect whatever upon them and they are absolutely protected against the action of the sulphurous gases from the coal. The way these nipples are protected in our boilers, render them as indestructible, as any part of the entire boiler and we are safe in saying that these nipples will outlast the boiler itself and the boiler is good for a lifetime.

PRICES AND DIMENSIONS

Number	Size of Fire Box	Size of Smoke Pipe	Floor Space	Size and No. of Flow Taps	Size and No. of Return Taps	Height of Water Line	Height of Heater	Square Ft. of Water Radiation	Square Ft. of Steam Radiation	Shipping Weight in lbs.	Hot Water	Price steam with Full Set Steam Trimmings
175	17x17	8-in.	27x31	2-2 $\frac{1}{2}$ in.	2-2 $\frac{1}{2}$ in.	48 $\frac{1}{2}$ in.	58 in.	.00	425	941	\$55.00	\$63.00
176	17x21 $\frac{1}{2}$	8-in.	27x36	2-2 $\frac{1}{2}$ in.	2-2 $\frac{1}{2}$ in.	48 $\frac{1}{2}$ in.	58 in.	900	525	1123	73.00	81.00
177	17x26	9-in.	27x41	3-2 $\frac{1}{2}$ in.	2-2 $\frac{1}{2}$ in.	48 $\frac{1}{2}$ in.	58 in.	1050	625	1305	83.00	91.00
178	17x30 $\frac{1}{2}$	9-in.	27x46	3-2 $\frac{1}{2}$ in.	2-2 $\frac{1}{2}$ in.	48 $\frac{1}{2}$ in.	59 in.	1250	725	1487	99.00	101.00

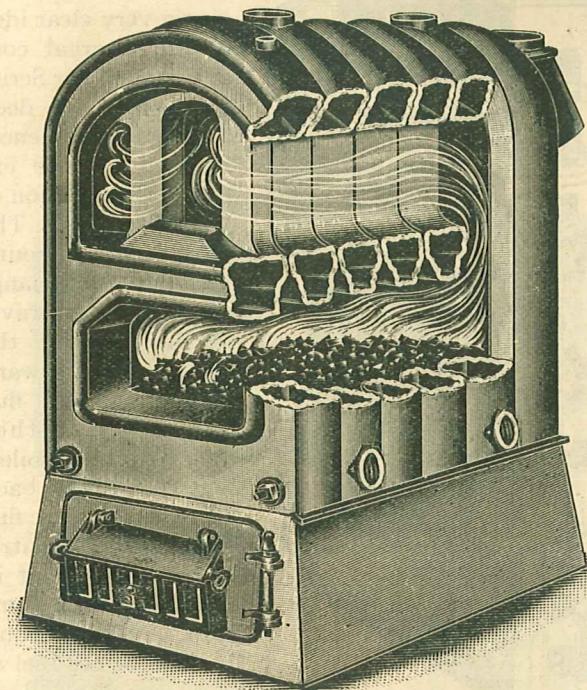
OUR PERFECTION BOILER.

No. 170 SERIES.



MAXIMUM EFFICIENCY.

Cast Iron Sectional Boilers for Large Plants



We are in position to furnish larger sized cast iron boilers, where larger plants are to be supplied than our No. 60 and 170 Series Boilers will be able to accommodate. For these larger sized plants we have a line of larger sized cast iron sectional boilers. These boilers are brand new and of similar construction to our other boilers described on the preceding pages, except that the fire box is more extended, broader and shallower, as this construction gives better satisfaction in large boilers of this kind.

Our 80 series boiler is designed similar to the sectional illustration as shown on this page. Our 90 series boiler is a much larger type of boiler and has a greater number of flue spaces. We will be glad to submit complete sectional blue print of this 90 series boiler on request. It is built of course for larger sized plants and is one of the best cast iron sectional boilers of the larger type on the market at the present time. The prices quoted on these boilers are very low, considering their size and capacity and their efficient construction and design. We guarantee these boilers to give absolute satisfaction in every way.

OUR No. 80 SERIES BOILERS

Dimensions and Prices as per Cut Shown on This Page

No.	Size of Grate	Size of Smoke-pipe	Floor Space	Height of Boiler	Height of w'ter line	Tappings Flow and Return	Direct Water R'diat'n	Direct Steam Radiat'n	Price for Water	Price for Steam with Trimmings
84	21x21	8	29x32	50	41 $\frac{1}{2}$	1-3	675	400	\$ 75.50	\$ 84.50
85	21x27	8	29x38	50	41 $\frac{1}{2}$	1-3	850	525	89.00	97.50
86	21x33	9	29x44	50	41 $\frac{1}{2}$	1-3	1050	650	107.50	115.70
87	21x39	9	29x50	50	41 $\frac{1}{2}$	2-3	1275	775	128.50	136.50

OUR No. 90 SERIES BOILERS

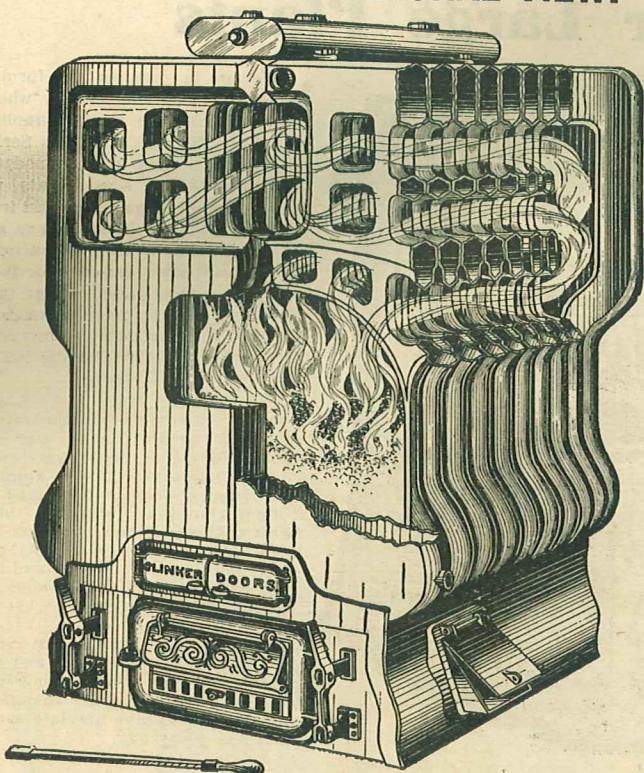
Complete blue prints of this 90 series boiler will be furnished on application.

No.	Size of Grate	Diameter Smokepipe	Floor Space	Tappings Flow and Returns	Direct Steam Radiation	Direct H. W.	Price of Steam	Price of Hot Water	Weight
95	33x35	12"	48x42	2-4"	1500	2500	\$214.50	\$206.50	4100
96	33x41	12"	47x48	2-4"	1800	3000	253.50	245.50	4500
97	33x48	14"	47x53	2-4"	2100	3500	297.70	289.50	4900
98	33x54	14"	47x59	3-4"	2400	4000	331.50	323.50	5450
99	53x60	16"	47x65	3-4"	2200	4500	351.00	343.00	5850

The above boilers are all shipped in separate sections and can be set up right on the job.

PERFECTION BOILER, No. 36 SERIES

SECTIONAL VIEW.



the improved smoke box extension shown with our Perfection boilers. These boilers are a very perfect hot water boiler as well as a perfect steam boiler. The clinker doors are large, and enable one to remove the clinkers without grinding them up to entirely clean out the fire box. The Water Boilers of this series are built practically the same as the Steam.

The sectional view shown herewith will give a very clear idea of the internal construction of our Series 36 Boiler, the deep fire pot with enormous flue space exposed to the action of the heated gases. The heated gases surround the row of overhanging flues, and travel to the back of the boiler, then forward through the flue spaces on either side of the boiler, and double back through the large flue area in the centre. The deep fire pot in this insures the same slow, perfect combustion of the fuel as in our smaller boilers. The boiler also has

the improved smoke box extension shown with our Perfection boilers.

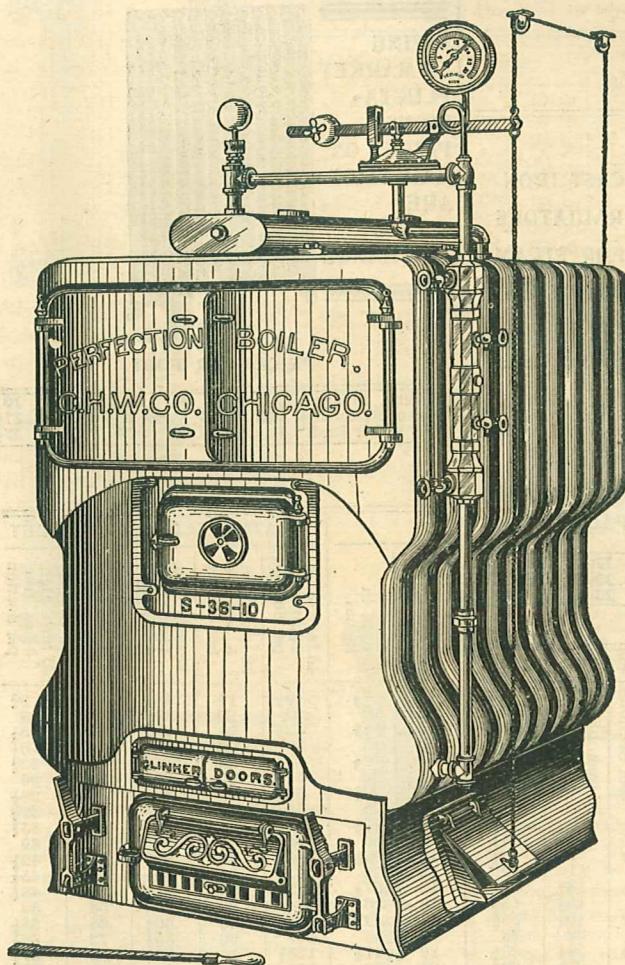
Number of Heater.	Number of Sections.	Size of Grate.	Total Height of Boiler in Inches	Size of Smoke Connection	Floor Space Including Smoke Box.	Size of Flow Tappings.	Size of Return Tappings	Capacity sq. ft. of Direct Water Radiation	Price Complete
W36- 6	6	36 x 33	73	14	52 x 47	1-5	2-4	2900	
W36- 7	7	36 x 39	73	14	52 x 54	2-5	1-5	3500	
W36- 8	8	36 x 45	73	15	52 x 60	2-5	2-4	4100	
W36- 9	9	36 x 51	73	15	52 x 66	2-5	1-5	4900	
W36-10	10	36 x 57	73	16	52 x 73	2-6	4-4	5500	
W36-11	11	36 x 63	73	17	52 x 80	2-6	1-6	6100	
W36-12	12	36 x 69	73	18	52 x 87	2-6	4-4	6700	
									PRICE ON APPLICATION.

See page 66 regarding ratings, guarantee, etc.

GET QUOTATIONS ON MARBLE FLOOR TILE AND WAINGSCOTING.

PERFECTION BOILER, No. 36 SERIES.

36 INCH GRATES



Our No. 36 Series of Perfection Steam and Water Boilers are large size boilers embodying the same salient features of the No. 60 and No. 170 Perfection boilers. These boilers have a 36 in. grate and have the same deep fire box, so that the grate must be extra heavy. These grates are extra strong and have a rounding top that grinds up the clinkers. These boilers are shipped in divided sections. The divided sections provide for all expansion and contraction which in the large size boilers is a considerable item, and so add materially to the life of the boiler. This boiler has been specially designed with a view of making a most perfect steam boiler for large size buildings. The separation of the steam from the water at the water line is particularly perfect.

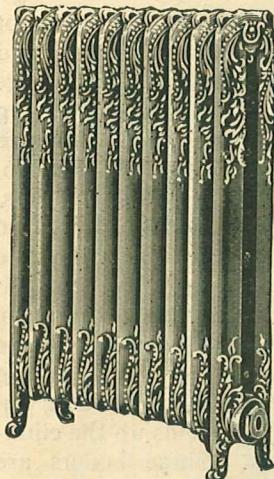
We claim these boilers to be the most perfect of any on the market.

Number of Heater.	Number of Sections.	Size of Grate.	Total Height of Boiler in Inches.	Height of Water Line.	Size of Smoke Connection.	Floor Space Including Smoke Box.	Size of Flow Tappings.	Size of Return Tappings.	Capacity sq. ft. Direct Steam Radiation.	Price with Complete Set Steam Trimmings.*
S36- 6	6	36 x 33	73	60	14	52 x 47	1-5	2-4	1775	
S36- 7	7	36 x 39	73	60	14	52 x 54	2-5	2-4	2150	
S36- 8	8	36 x 45	73	60	15	52 x 60	2-5	2-4	2550	
S36- 9	9	36 x 51	73	60	15	52 x 66	2-5	4-4	2950	
S36-10	10	36 x 57	73	60	16	52 x 73	2-6	4-4	3350	
S36-11	11	36 x 63	73	60	17	52 x 80	2-6	4-4	3750	
S36-12	12	36 x 69	73	60	18	52 x 87	2-6	4-4	4150	
										PRICE ON APPLICATION.

See page 66 regarding ratings, guarantee, etc.
See page 73 for sectional view of boiler.

WE HAVE COMPLETE BATHROOM OUTFITS FOR \$37.50.

Ornamental New Radiation



CAST IRON
RADIATORS
FOR STEAM
OR WATER

NET CASH PRICES PER SQUARE FOOT OF HEATING SURFACE

Height, inches....	45	38	32	26	20
Steam Radiation....	\$0.18	\$0.18	\$0.23	\$0.25	\$0.27 $\frac{1}{2}$
Hot Water Radi'n....	.19	.19	.23	.25	.27 $\frac{1}{2}$

No. of Sections	HEATING SURFACE, SQ. FEET					
	Length, 2 $\frac{1}{2}$ inches per Section	45 inch, high, 5 $\frac{1}{2}$ sq. feet per Section	38 inch, high, 4 $\frac{1}{2}$ sq. feet per Section	32 inch, high, 3 $\frac{1}{2}$ sq. feet per Section	26 inch, high, 2 $\frac{1}{2}$ sq. feet per Section	20 inch, high, 2 $\frac{1}{2}$ sq. feet per Section
2	5	10 $\frac{1}{2}$	8 $\frac{1}{2}$	7	5 $\frac{1}{2}$	4 $\frac{1}{2}$
3	7 $\frac{1}{2}$	15 $\frac{1}{2}$	13	10 $\frac{1}{2}$	8 $\frac{1}{2}$	6 $\frac{1}{2}$
4	10	21	17 $\frac{1}{2}$	14	11	9
5	12 $\frac{1}{2}$	26 $\frac{1}{2}$	21 $\frac{1}{2}$	17 $\frac{1}{2}$	13 $\frac{1}{2}$	11 $\frac{1}{2}$
6	15	31 $\frac{1}{2}$	26	21	16 $\frac{1}{2}$	13 $\frac{1}{2}$
7	17 $\frac{1}{2}$	36 $\frac{1}{2}$	30 $\frac{1}{2}$	24 $\frac{1}{2}$	19 $\frac{1}{2}$	15 $\frac{1}{2}$
8	20	42	34 $\frac{1}{2}$	28	22	18
9	22 $\frac{1}{2}$	47 $\frac{1}{2}$	39	31 $\frac{1}{2}$	24 $\frac{1}{2}$	20 $\frac{1}{2}$
10	25	52 $\frac{1}{2}$	43 $\frac{1}{2}$	35	27 $\frac{1}{2}$	22 $\frac{1}{2}$
11	27 $\frac{1}{2}$	57 $\frac{1}{2}$	47 $\frac{1}{2}$	38 $\frac{1}{2}$	30 $\frac{1}{2}$	24 $\frac{1}{2}$
12	30	63	52	42	33	27
13	32 $\frac{1}{2}$	68 $\frac{1}{2}$	56 $\frac{1}{2}$	45 $\frac{1}{2}$	35 $\frac{1}{2}$	29 $\frac{1}{2}$
14	35	73 $\frac{1}{2}$	60 $\frac{1}{2}$	49	38 $\frac{1}{2}$	31 $\frac{1}{2}$
15	37 $\frac{1}{2}$	78 $\frac{1}{2}$	65	52 $\frac{1}{2}$	41 $\frac{1}{2}$	33 $\frac{1}{2}$
16	40	84	69 $\frac{1}{2}$	56	44	36
17	42 $\frac{1}{2}$	89 $\frac{1}{2}$	73 $\frac{1}{2}$	59 $\frac{1}{2}$	46 $\frac{1}{2}$	38 $\frac{1}{2}$
18	45	94 $\frac{1}{2}$	78	63	49 $\frac{1}{2}$	40 $\frac{1}{2}$
19	47 $\frac{1}{2}$	99 $\frac{1}{2}$	82 $\frac{1}{2}$	66 $\frac{1}{2}$	52 $\frac{1}{2}$	42 $\frac{1}{2}$
20	50	105	86 $\frac{1}{2}$	70	55	45
21	52 $\frac{1}{2}$	110 $\frac{1}{2}$	91	73 $\frac{1}{2}$	57 $\frac{1}{2}$	47 $\frac{1}{2}$
22	55	115 $\frac{1}{2}$	95 $\frac{1}{2}$	77	60 $\frac{1}{2}$	49 $\frac{1}{2}$
23	57 $\frac{1}{2}$	120 $\frac{1}{2}$	99 $\frac{1}{2}$	80 $\frac{1}{2}$	63 $\frac{1}{2}$	51 $\frac{1}{2}$
24	60	126	104	84	66	54
25	62 $\frac{1}{2}$	131 $\frac{1}{2}$	108 $\frac{1}{2}$	87 $\frac{1}{2}$	68 $\frac{1}{2}$	56 $\frac{1}{2}$

Each Section 7 $\frac{1}{4}$ inches wide. Width of legs 8 inches.

TAPPINGS.

All Radiators containing 26 feet or under, 1 inch.

All Radiators containing above 26 feet but not exceeding 60 feet, 1 $\frac{1}{4}$ inch.

All Radiators containing above 60 feet but not exceeding 112 feet, 1 $\frac{1}{2}$ inch.

All Radiators containing above 112 feet, 2 inch.

New Radiation

THREE COLUMN CAST IRON

OWING
TO MARKET
FLUCTUA-
TIONS
PRICES ON
RADIATION
ARE
SUBJECT
TO CHANGE



PRICES PER FOOT

Height, inches....	45	38	32	26	20
Steam Radiation....	\$0.18	\$0.18	\$0.23	\$0.25	\$0.27 $\frac{1}{2}$
Hot Water Radi'n....	.19	.19	.23	.25	.27 $\frac{1}{2}$

No. of Sections	HEATING SURFACE, SQ. FEET					
	Length in inches	45 inch, high, 6 $\frac{1}{2}$ sq. feet per Section	38 inch, high, 5 $\frac{1}{2}$ sq. feet per Section	32 inch, high, 4 $\frac{1}{2}$ sq. feet per Section	26 inch, high, 3 $\frac{1}{2}$ sq. feet per Section	20 inch, high, 3 $\frac{1}{2}$ sq. feet per Section
3	7 $\frac{1}{2}$	19 $\frac{1}{2}$	15	14 $\frac{1}{2}$	12	9 $\frac{1}{2}$
4	10	26	20	19	16	13
5	12 $\frac{1}{2}$	32 $\frac{1}{2}$	25	23 $\frac{3}{4}$	20	16 $\frac{1}{4}$
6	15	39	30	28 $\frac{1}{2}$	24	19 $\frac{1}{2}$
7	17 $\frac{1}{2}$	45 $\frac{1}{2}$	35	33 $\frac{1}{4}$	28	22 $\frac{1}{2}$
8	20	52	40	38	32	26
9	22 $\frac{1}{2}$	58 $\frac{1}{2}$	45	42 $\frac{1}{2}$	36	29 $\frac{1}{2}$
10	25	65	50	47 $\frac{1}{2}$	40	32 $\frac{1}{2}$
11	27 $\frac{1}{2}$	71 $\frac{1}{2}$	55	52 $\frac{1}{2}$	44	35 $\frac{1}{2}$
12	30	78	60	57	48	39
13	32 $\frac{1}{2}$	84 $\frac{1}{2}$	65	61 $\frac{1}{2}$	52	42 $\frac{1}{2}$
14	35	91	70	66 $\frac{1}{2}$	56	45 $\frac{1}{2}$
15	37 $\frac{1}{2}$	97 $\frac{1}{2}$	75	71 $\frac{1}{2}$	60	48 $\frac{1}{2}$
16	40	104	80	76	64	52
17	42 $\frac{1}{2}$	110 $\frac{1}{2}$	85	80 $\frac{1}{2}$	68	55 $\frac{1}{2}$
18	45	117	90	85 $\frac{1}{2}$	72	58 $\frac{1}{2}$
19	47 $\frac{1}{2}$	123 $\frac{1}{2}$	95	90 $\frac{1}{2}$	76	61 $\frac{1}{2}$
20	50	130	100	95	80	65
21	52 $\frac{1}{2}$	136 $\frac{1}{2}$	105	99 $\frac{1}{2}$	84	68 $\frac{1}{2}$
22	55	143	110	104 $\frac{1}{2}$	88	71 $\frac{1}{2}$
23	57 $\frac{1}{2}$	149 $\frac{1}{2}$	115	109 $\frac{1}{2}$	92	74 $\frac{1}{2}$
24	60	156	120	114	96	78
25	62 $\frac{1}{2}$	162 $\frac{1}{2}$	125	118 $\frac{1}{2}$	100	81 $\frac{1}{2}$

TAPPINGS.

All Radiators containing 26 feet or under, 1 inch.

All Radiators containing above 26 feet but not exceeding 60 feet, 1 $\frac{1}{4}$ inch.

All Radiators containing above 60 feet but not exceeding 112 feet, 1 $\frac{1}{2}$ inch.

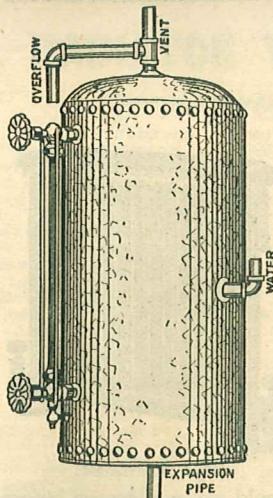
All Radiators containing above 112 feet, 2 inch.

Each Section is 9 $\frac{1}{2}$ inches wide; width of Legs, 10 $\frac{1}{2}$ inches.

Distance from floor to center of Tapping, 5 inches.

NOTE.—In ordering, always mention whether for steam or water, and if for steam, whether for one or two pipe, or for atmospheric or vapor system. For steam, one pipe tapping will be regularly supplied, unless otherwise specified.

LET US MAKE YOU A PROPOSITION ON YOUR COMPLETE HEATING PLANT



PRICE LIST OF GALVANIZED STEEL EXPANSION TANKS.

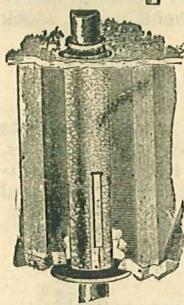
Lot H 604. These prices include the tank, gauge cocks with brass body, iron wheels and protecting guards, as shown, but do not include the inlet or outlet fittings.

Capacity	Size	Square ft. of Radiation.	Price Tank and Gauge.
8 gallons	10 in. x 20 in.	250	\$ 3.10
10 "	12 " x 20 in.	300	3.50
12 "	12 " x 24 in.	400	3.70
15 "	12 " x 30 in.	500	3.85
18 "	12 " x 36 in.	600	4.10
20 "	14 " x 30 in.	700	5.10
24 "	14 " x 36 in.	850	5.40
36 "	16 " x 30 in.	1000	5.70
32 "	16 " x 36 in.	1300	6.10
42 "	16 " x 48 in.	2000	8.10
66 "	18 " x 60 in.	3000	14.55

FLOOR SLEEVES

No. H. 605. Galvanized Perforated Floor Sleeves.

Sizes, inches.	Prizes each.
1 ¹ / ₂	\$0.30
1 ¹ / ₄	.35
1 ¹ / ₂	.40
2 ¹ / ₂	.45
2	.50
2 ¹ / ₄	.55

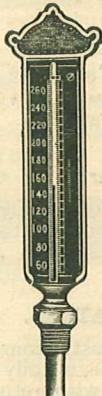


HOT WATER THERMOMETER

Hot Water Thermometers for Hot Water Boilers registering up to 220 degrees, guaranteed accurate. We can furnish these straight as shown in the illustration herewith, each **\$0.75**

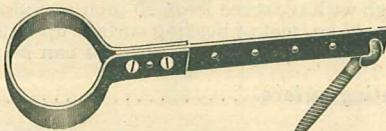
Angle for use on risers or circulating pipe, each..... **\$0.80**

Each Thermometer is sent out carefully packed in a separate wooden box, and is guaranteed accurate. Do not loosen to set screw nor attempt to change thermometer to face in different way.

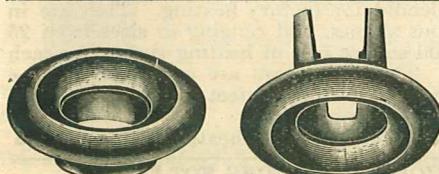


HANGERS

Can be cut to all desired lengths by disconnecting two lower screws. The most practical pipe hanger on the market. Easy to adjust. Can be put up in one-half the time it requires by any ordinary hanger.



Size of Pipe	Price each	Adjust. Length 2 to 10 in.	Adjust. Length 10 to 16 in.
		Size of Pipe	Price each
1 in.	.07	1 in.	.08
1 ¹ / ₂ "	.08	1 ¹ / ₂ "	.09
1 ¹ / ₂ "	.08 ¹ / ₂	1 ¹ / ₂ "	.10
2 "	.10	2 "	.11
2 ¹ / ₂ "	.12	2 ¹ / ₂ "	.13
3 "	.14	3 "	.15
3 ¹ / ₂ "	.15	3 ¹ / ₂ "	.16
4 "	.18	4 "	.19



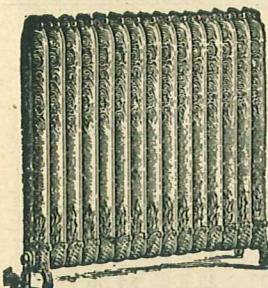
NICKEL PLATED FLANGES

Nickel Plated Spun Floor and Ceiling Flanges.

Size, inches	1/2	3/4	1	1 1/4	1 1/2	2
Floor flange, each	.04	.04	.05	.06	.07	.09
Ceiling, flange, each	.06	.06	.07	.08	.09	.12

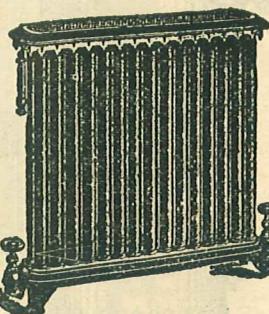
RADIATION.

REBUILT.



Cast Iron Radiator.

In connection with our purchasing and dismantling, we secure large numbers of fine radiators. We have them in all styles, for steam and water; for factory, residence, public halls, and other purposes. If you will write us your requirements in the heating line, we will make you a proposition to furnish you all of the material necessary to install your plant. Write us your wants. We can save you money. At the present time our stock of rebuilt radiators includes anything you require. They are in fine condition, have been rebuilt, and every radiator is tested under cold water pressure before shipment. You can purchase without hesitation. We guarantee them. Our stock consists of the following:



Pipe Radiator.

CAST IRON RADIATORS.

Our stock consists of 2 and 3 column steam and water radiators, ranging in heights from 18 to 45 inch. We can furnish almost anything required in 38 inch radiators, either 2 or 3 column. These radiators are standard size, and contain 4 sq. feet of heating surface to the 2 column, and 5 sq. feet to the 3 column. They are very ornamental in pattern, and suitable for the best residence purposes. Prices as follows:

For Steam.

Heights up to 24 inch, price per square foot of heating surface	\$0.18
Heights from 24 to 32 inch, inclusive, per square foot of heating surface.....	.17
All other heights, per square foot of heating surface.15

For Water.

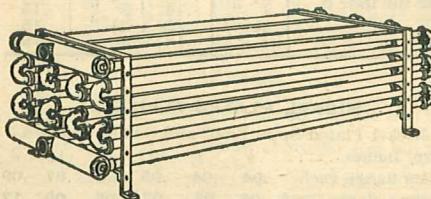
Heights up to 24 inch, price per square foot of heating surface	\$0.18
From 24 to 32 inch, inclusive, per square foot of heating surface.17
All other heights, per square foot of heating surface.16

PIPE RADIATORS.

These radiators are shown in the above illustrations. They are constructed of upright lengths of standard black wrought iron pipe, usually 1 inch in diameter. They have fancy cast iron substantial bases, are fitted with return bends on top, and have a cast iron cover. We have them square, oblong and circular. They are, as a rule, 36 inch in height on an average, although we have some from 20 inch up; also some that are much higher. They range in size from 15 sq. feet of heating surface up to 250 sq. feet of heating surface. The openings can be made any size required, and can be used on either single or two-pipe system.

Price per square foot of heating surface. \$0.13

BOX COILS.



Made of 1-inch standard black wrought iron pipe, with return bends and headers —splendid for factory heating. They are in various shapes, and ranging in sizes from 25 to 200 square feet of heating surface to each coil. These radiators are computed on the basis of about 3 lineal feet of pipe to 1 square foot of heating surface.

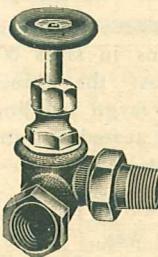
Price per square foot of heating surface. \$0.13

RADIATOR VALVES AND PIPE COVERING

RADIATOR VALVES

No. 19. Jenkens' Disc, Corner Radiator Valves with Union, Nickel Plated. Brand New. Left hand or right hand. In ordering be sure to state kind wanted. Illustration shows R. H. Corner Valve.

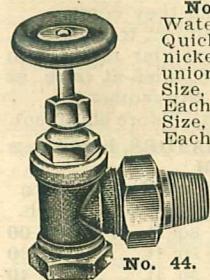
Size, ins. 1 1 1/4 1 1/2 2
Price, ea. \$1.00 \$1.35 \$1.76 \$2.80



No. 16. Jenkens' Disc, Radiator Angle Valves, with union, Nickel Plated all over.

Size, ins. 1 1 1/4 1 1/2
Each. \$0.65 .80 1.10
Size, ins. 1 1/2 2
Each \$1.40 \$2.25

No. 8. Lock Shield Radiator Valves, Jenkens' Disc, with unions. Size, ins. 3/4 1 1 1/4 1 1/2 2
Price, each. \$0.65 \$0.80 \$1.10 \$1.40 \$2.25
Keys extra, each. \$0.08



HOT WATER UNION ELBOWS



NO. 44.

No. 44. Brand new Hot Water Radiator Valves. Quick opening. Rough body, nickel plated all over, with union.

Size, ins. 3/4 1 1 1/4
Each. \$0.50 \$0.62 \$0.85
Size, ins. 1 1/2 2
Each \$1.25 \$1.85

No. 45. Brand new, Solid brass. Nickel plated all over. Size, ins. 3/4 1 1 1/4 1 1/2 2
Price, each. \$0.35 \$0.44 \$0.54 \$0.70 \$1.17

AIR VALVES

No. 13. Compression Radiator Air Valves. All Brass. Brand new. Size, 1/8 inch. Price, each. \$0.09
Per doz.90



AUTOMATIC RADIATOR

AIR VALVES

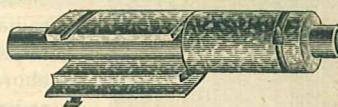
For Steam.

Nickel Plated.

Price, each. \$0.40



MOLDED SECTIONAL PIPE COVERING



This form of covering is offered as the most durable and effective molded non-conducting covering yet produced. It is absolutely fire-proof, and is made in sections of all sizes, three feet long, which are provided with a canvas jacket and metal bands to hold them firmly in place, can be easily applied by unskilled workmen. All that is necessary is to paste the canvas flap down firmly and put on the bands.

NO. H. 591. WOOL FELT COVERING

Inside Diameter of Pipe.	Price Per Section of 3 feet.
1-2 inch.....	\$0.13
3-4 inch.....	.15
1 inch.....	.16
1 1-4 inch.....	.18
1 1-2 inch.....	.20
2 inch.....	.22
2 1-2 inch.....	.24
3 inch.....	.27
3 1-2 inch.....	.30
4 inch.....	.36
5 inch.....	.42
6 inch.....	.48
7 inch.....	.60
8 inch.....	.66

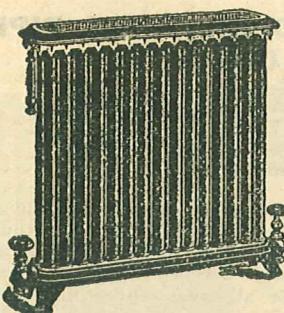
NO. H. 592. ASBESTOS COVERING

Inside Diameter of Pipe.	Price Per Section of 3 feet.
1-2 inch.....	\$0.14
3-4 inch.....	.16
1 inch.....	.18
1 1-4 inch.....	.20
1 1-2 inch.....	.22
2 inch.....	.25
2 1-2 inch.....	.27
3 inch.....	.30
3 1-2 inch.....	.33
4 inch.....	.39
5 inch.....	.46
6 inch.....	.54
7 inch.....	.66
8 inch.....	.72

No. 593. Asbestos Cement in bags of 100 to 125 lbs. each per bag..... \$1.25
Smaller quantities, per lb..... .03

WE ARE CONSTANTLY BUYING STOCKS AT SHERIFFS' AND RECEIVERS' SALES.

AN EXCEPTIONAL OFFER



We purchased the entire Heating Equipment of one of the largest buildings in Chicago.

15,000 sq. feet of good sound second hand pipe radiation, runs in sizes 60 to 150 sq. feet to the radiator. Just the thing for heating factories, churches or large buildings of any kind. Every radiator fully tested and guaranteed steam tight before shipment.

This radiation is positively just as good as brand new in every way. While it lasts, we will sacrifice it at 13 cts. per sq. foot.

You could not buy the Pipe alone for less than that. These are standard pipe radiators made up with upright pipes screwed into a cast iron base.

SPECIAL RADIATOR BARGAINS

We have in our warehouse at the present time the following second-hand rebuilt radiators, which we will sacrifice at the prices quoted while they last.

Do you intend to install a heating plant this season? If so, it will be well to look over this list carefully and select any radiators you can use. Remember, these radiators are just as good as new in every way, fully tested and guaranteed steam and water tight. These radiators will not remain long in our possession at these prices. Therefore, act at once. Check off the radiators you can use and send us your order. You do not need to have them shipped at once. If you prefer, we will tag them for you and hold them until you are ready to use them. With us, it is first come, first served. DO IT NOW.

38-inch, 2-column STEAM RADIATORS, second-hand.

Radiators	Amount of	Price
	Sections	Heating Surface Each
2.....	22.....	88 sq. ft. \$14.00
4.....	20.....	80 sq. ft. 12.80
6.....	18.....	72 sq. ft. 11.52
1.....	17.....	68 sq. ft. 10.88
3.....	15.....	60 sq. ft. 9.80
4.....	13.....	52 sq. ft. 8.32
2.....	12.....	48 sq. ft. 7.68
1.....	11.....	44 sq. ft. 7.04
7.....	10.....	40 sq. ft. 6.40
1.....	7.....	28 sq. ft. 4.48
4.....	3.....	12 sq. ft. 1.92

A SNAP ON BRAND NEW RADIATORS

We bought up the following entire job lot of brand new radiators at a bankrupt sale a short time ago and we are now closing them out at the following prices. We do not break these radiators up. Sold just in the sizes in which they come.

They are all offered subject to prior sale. If you can use any particular radiator in this list, telegraph your order at once, as it is liable to be sold at any moment. Guaranteed steam tight, before shipment.

37-inch, 2-column, RADIATORS, brand-new STEAM.

Radiators.	Sec- tions.	Amt. of Heat- ing Surface.	Price Each.
47.....	20.....	90 sq. ft. ...	\$16.00
43.....	19.....	77½ sq. ft. ...	15.20
18.....	18.....	81 sq. ft. ...	14.40
32.....	17.....	76½ sq. ft. ...	13.60
35.....	16.....	72 sq. ft. ...	12.80
19.....	15.....	67½ sq. ft. ...	12.00
12.....	14.....	63 sq. ft. ...	11.20
27.....	13.....	58½ sq. ft. ...	10.40
7.....	12.....	54 sq. ft. ...	9.60
41.....	11.....	49½ sq. ft. ...	8.80
1.....	10.....	45 sq. ft. ...	8.00
15.....	9.....	40½ sq. ft. ...	7.20
WATER.			
1.....	25.....	112 sq. ft. ...	\$17.00
7.....	20.....	90½ sq. ft. ...	16.00
10.....	19.....	85 sq. ft. ...	15.20
11.....	18.....	71½ sq. ft. ...	14.40
4.....	17.....	76 sq. ft. ...	13.60
5.....	16.....	72½ sq. ft. ...	12.80
7.....	15.....	67 sq. ft. ...	12.00
4.....	14.....	63½ sq. ft. ...	11.20

HAVE YOU A FACTORY TO HEAT?

Send us a sketch and we will line up a plant for you that we will absolutely guarantee using this second-hand material and we can save you 50 to 75 per cent.

Church and Theatre Heating

LARGE JOBS—We are fully equipped to estimate and design the largest steam or hot water heating plant imaginable, no job is too large or too small for us. The larger the job, the more money we can save you.

Our heating systems are scattered throughout the entire country, and among these you will find every size of plant from a 70 or 80 room hotel down to a 4 room cottage, with a large scattering of school and church buildings which we equipped and on which the amount of radiation sometimes goes up into the thousands of square feet.

In heating churches and theatres, a quite different problem is encountered from heating dwellings, offices and factories. It is necessary in planning a heating plant for an auditorium of this sort, to take into consideration the effect of heated currents of air in the acoustic conditions of the auditorium. It is a noteworthy fact that spoken sound will carry across an empty room very much better than across a room that is occupied by a large number of people. The reason for this is that all the atmosphere of the room is practically of the same temperature and is not chopped up into a great number of different strata and currents.

There is a certain amount of heat radiating from every human being in a room, and this forms an upward current of air and a large number of these break up the air in any room into a multitude of cross currents, which have their effect on the transmission of sound waves. This effect is increased by radiation poorly placed and this means a great deal in any auditorium, particularly the larger sized ones.

If the problem is left to us, we will design a heating plant that will tend to equalize as much as possible all existing conditions, and not only heat the room but improve the general acoustic properties. A room of this size must be provided with perfect ventilation, and for this reason a certain amount of indirect radiation is desirable, and a certain number of foul air outlets. All buildings of this sort should be provided with vent flues running from an opening in the wall near the floor, out through the roof. In old buildings where such provisions have not been made, we will suggest the best means of both heat and ventilation.

SCHOOL HOUSE HEATING

In school house heating one of the most essential features is to provide for perfect ventilation with frequent changes of the atmosphere in the room. There should be from twenty to forty cubic feet of fresh air per minute admitted to these rooms, for every person occupying them. The air must be thoroughly warmed and ample provision must be made for removing the foul air, and this must be done without drafts or strong air currents in any part of the rooms. A combination of direct and indirect heating is the best for school house purposes. On receipt of school house plans our engineering department will make up plans and specifications as to how to secure the required results in heating and ventilating any school building.

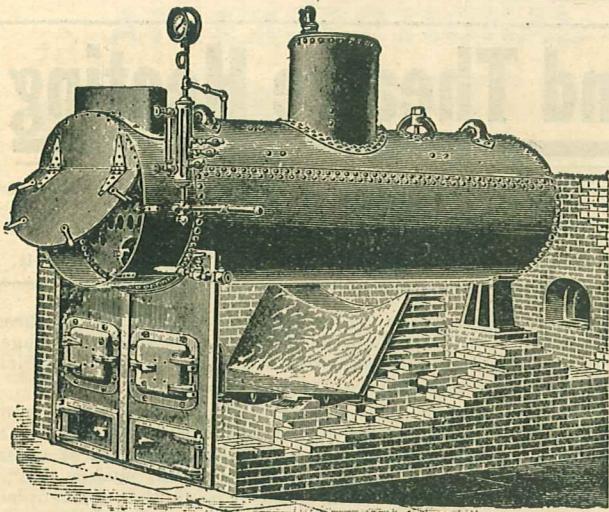
BLOWER SYSTEM

In larger school houses the best heating apparatus is the blower system. We are in a position to figure and quote on this kind of apparatus, but it is rather expensive, and except in larger city buildings is not particularly desirable. Electric current or some other motive power is necessary to operate the fans in the blower system.

EXHAUST HEATING SYSTEM

We are prepared to make estimates and design heating system for large buildings or for a number of buildings spread out over considerable ground, using exhaust steam for heating purposes, combined in a vacuum system. The vacuum system of heating can also be used where there is no exhaust steam.

In the vacuum heating system, it is impossible to heat a number of buildings on different ground levels, conveying all the condensation back to the boiler. The steam is carried in a moderately high pressure boiler from 40 to 50 pounds pressure, and is reduced with a pressure reducing valve and conveyed throughout all the different buildings to radiators, heating coils, etc., and all the condensation is brought back to the boiler room by means of a vacuum pump and is stored in a receiving tank. With a boiler feed pump the hot water is removed from this receiving tank and forced into the boiler, thus using the same water over and over again, and feeding it hot into the boiler. On receipt of building plans we will make up estimates and specifications covering a heating plant of this kind.



Horizontal Tubular Boilers

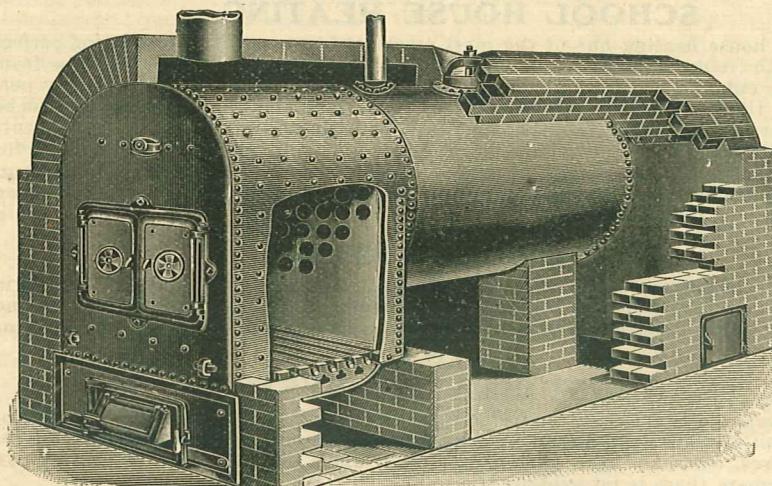
We have always in stock any number of good rebuilt Horizontal Tubular Boilers, ranging in size from 30 inches diameter by 8 feet in length up to 72 inches diameter by 20 feet in length; or, in other words, from 10 to 175 horse power, with a capacity of 1,000 to 18,000 feet of radiation. These boilers are thoroughly overhauled before shipment. On large heating jobs we recommend their use. If you will give us plans and information as outlined on page 46 of this book, we can better estimate your requirements, and will make you a proposition on a complete tubular boiler ready for installation. Can furnish these with or without domes. They are practical for either steam or hot water heating. Following are the general specifications of what we have to offer in these boilers:

Nominal Horse Power Capacity, square feet, Direct Steam Radiation*	12	15	15	20	28	34	40	45	50	60	70	85	100	125
1000	1200	1400		1800	2600	3100	3600	4700	5500	6900	8000	7200	9000	11500
Diameter, inches.....	30	30	36*	36	42	42	42	48	48	54	54	60	66	72
Length Tubes, feet.....	8	10	8	10	10	12	14	12	14	14	14	16	16	16
Thickness Shell, inches.....	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{4}$	1 $\frac{1}{2}$					
Thickness Heads, inches.....	3 $\frac{1}{8}$	3 $\frac{1}{8}$	2 $\frac{1}{8}$	3 $\frac{1}{8}$										
Diam. Stack, if vertical, ins.....	14	14	16	16	20	20	20	24	24	26	28	28	32	36

*In computing water radiation add 40 per cent. to steam capacity.

Where we furnish Horizontal Tubular Boilers to be set in brick work, we will furnish without additional charge blue print plans showing the brick setting. These boilers are particularly desirable in green house heating. We remodel steam boilers into water boilers for greenhouse heating when water is to be used. Our boilers when overhauled and rebuilt will give you practically as good service as new boilers, and our prices will be found very much less than new. We have boilers of the same general specifications as above in strictly first-class condition to be used for power up to 100 or 150 lbs. pressure. Write us for anything in this line that you may need. Prices on any of the above boilers furnished on application.

Fire Box Boilers



Our stock of Fire Box Boilers is constantly changing but we always have on hand upwards of fifty or one hundred boilers in various sizes for heating jobs. We recommend the use of these boilers where a low priced economical boiler is required. These boilers are all thoroughly overhauled by us, carefully cleaned inside and out, and any repairs that may seem necessary to put them in A1 condition are made. We

thoroughly test our boilers here and guarantee them. The Fire Box Boilers can be brick set as shown in above illustration, or can be set without brickwork. We will furnish the boilers with smoke box extension and stack connection, so that they can be set without brickwork when desired. In steam jobs we furnish the boilers with a complete set of steel trimmings. Following is the rating of standard sizes:

Diameter of Shell, inches.....	30	30	30	36	36	36	42	42	42	42	48	38	48	54
Length over all, feet.....	6 $\frac{1}{2}$	7 $\frac{1}{2}$	8 $\frac{1}{2}$	7 $\frac{1}{2}$	9	10 $\frac{1}{2}$	8 $\frac{1}{2}$	10	11 $\frac{1}{2}$	10 $\frac{1}{2}$	12	13 $\frac{1}{2}$	14	16
Size of Smoke Stack, inches.....	16	16	16	18	18	18	20	20	20	22	22	22	24	24
Capacity, direct steam.....	900	1000	1200	1400	1700	2100	2200	2500	2900	3200	3800	4400	4900	5800
Capacity, direct water.....	1400	1600	1900	2200	2700	3400	3500	4000	4600	5100	6100	7000	7800	9300

REBUILT BOILERS FOR HEATING PURPOSES

We have at the present time about 200 second-hand heating boilers that have come into our possession through **dismantling** the St. Louis Exposition or other large Institutions. Among these boilers are **locomotive**, **fire box type**, the **horizontal tubular boiler**, **vertical tubular boiler**, **economic return tubular boiler**, **green house heating boilers** and **cast iron sectional boilers**. All the boilers which we offer in this list will be put through our **boiler shop**, thoroughly overhauled, and cleaned inside and outside, and any repairs that may be necessary to put them in strictly first-class condition, will be made. **We have facilities for building boilers and for thoroughly repairing them.** Every boiler we send out will not only be thoroughly repaired, but will be **tested to a hydrostatic pressure** of at least **Fifty Pounds**, and fully guaranteed. If you do not find just what you want in this list, we will be glad to have you write us as to your requirements.

In the fire box patterns we have the following:

No. J. 41. One Water Bottom Fire Box Boiler, 32 ft. x 9 in., with a capacity of 1,500 ft. steam or 2,500 ft. hot water radiation. Complete with smoke box extension, smoke head door, fire door, ash door, grate bars, with two hand holes. This boiler is extra well braced. Total height of boiler 57 in., grates 36x25 in., 26 3-inch flues. It was used for high pressure steam, and is made of very heavy boiler plate.

No. J 42. One Fire Box Boiler, 42 in. x 9 ft., capacity 2,200 ft. steam radiation. This boiler is not adapted for hot water, but would make a capital boiler for heating a greenhouse with steam. It has a dome and four handholes. It is extra well braced, horizontal seams double riveted. Has been used as a high pressure boiler. Grates 42 in. by 36 in., 105 2-inch flues. Complete with smoke box extension and smoke head doors.

No. J. 43. One Open Bottom brand new fire box boiler, 44 in. in diameter by 10 ft. 3 in. long, capacity 3,000 steam or 5,000 feet hot water radiation. This boiler is made of $\frac{3}{8}$ in. shell and 7-16 in. heads. Has 48 3-inch flues and fire box is 36x43 in. Fire door is 10x15 in. Boiler has two hand holes in front of fire box at bottom and one at top. Has 4 in. flow tap on top and 3 in. return tap on bottom and back of fire box. Boiler is without smoke box extension and is designed to be brick set.

No. J 44. One Fire Box Boiler, 42 in. x 14 ft. with dome, with a capacity of 3,500 ft. steam or 5,000 ft. of hot water radiation. Grates 36x50 in., 38 3-inch flues. Complete with fire door and ash door, smoke box extension, and smoke head door.

In the Horizontal Tubular Boilers to be set up in brick work, we have a very large stock, ranging in all sizes. The following are but a few of these boilers that will give you an idea of the price of the different sizes:

No. J 401. One Horizontal Tubular Boiler, 30 in. x 8 ft., capacity 1,400 ft. steam and 2,100 ft. hot water radiation. 20 3-inch tubes. Shell $\frac{1}{4}$ -in. thick, heads $\frac{3}{8}$ -in. thick. Boiler complete with smoke box extension, smoke head door, stack saddle, fire front, grate bars, bearing bars, back arch frame, ash door and frame, and with a set of fire tools.

No. J 402. One 36 in. by 10 ft. horizontal tubular boiler with dome, and with manhole on top and one handhole in the end, 26 3-in. flues. Horizontal seams, double riveted. Capacity 2,200 ft. steam and 3,500 feet hot water radiation. Same description as above.

No. J 403. One horizontal tubular boiler 42 in. by 10 ft. Has a dome and manhole. Has 48 3-inch flues. Made of 5-16 inch shell and $\frac{3}{8}$ in. head. Horizontal seams double riveted. Complete with smoke box extension, with front including fire and ash doors, bearing bars; grate bars, soot frame and door, and a full set of steam fittings. The boiler will be put through our shops and given an overhauling, all necessary repairs being made to put it in first-class condition. Capacity 3,600 ft. steam and 4,200 ft. water radiation.

No. J. 405. One horizontal tubular boiler 42 in. by 18 ft. with dome and manhole. 5-16 in. shell and $\frac{7}{8}$ inch head. Horizontal seams double riveted, 34 3-inch flues. Has side lugs. Capacity 4,000 ft. steam or 6,500 feet hot water radiation. Furnished with smoke extension, clean out door, two doors, ash frame and doors, soot frame and door with bearing bars and grate bars.

FOR LARGE STEAM OR HOT WATER PLANTS

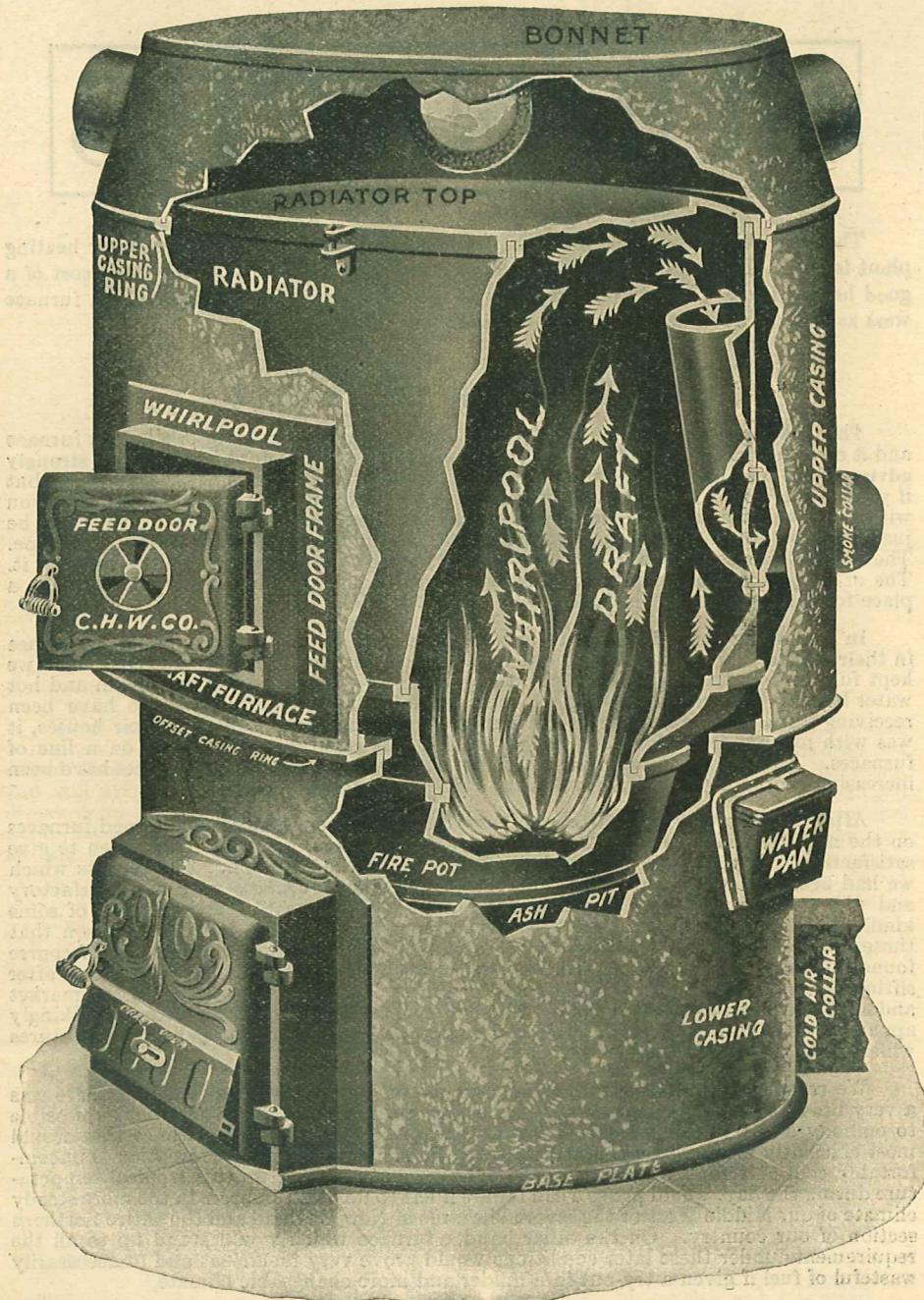
We recommend these Second-Hand Horizontal Tubular Fire Box Boilers
They are for all practical purposes, just as good as new.

WRITE FOR PRICES

We are quoting Prices on these Boilers, which do not represent one-half their actual value.

The above represents only a very small number of the boilers we have in our yard at the present time. We can quote you on practically any size boiler manufactured and we guarantee a saving of at least 50 per cent.

Our Whirlpool Draft Furnace.



BURNS ANYTHING COMBUSTIBLE.

OUR ECONOMY FURNACE

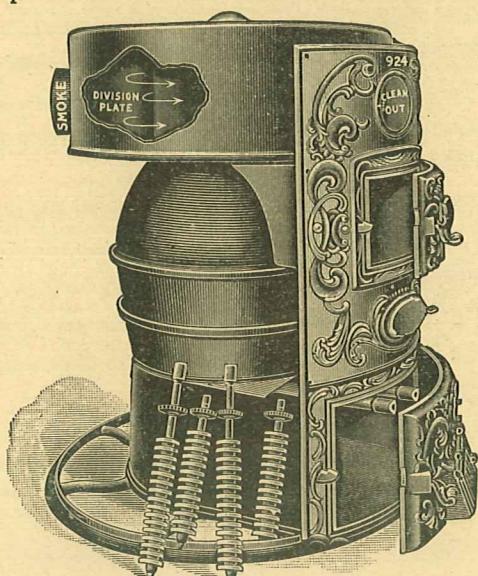
To meet the other conditions, where the climate is more steady and severe, we have designed our "ECONOMY" FURNACE shown in the accompanying illustration.

All of the best features in our "WHIRL-POOL" DRAFT FURNACE have been skilfully retained and brought out in this furnace and at the same time those particular points of design which necessarily had to be changed to meet the conditions have been very carefully altered, and the highest point of efficiency in the furnace under those particular conditions is the result. The castings had to be made heavier, and to overcome this and to properly transmit the heat they had to be designed in the most scientific manner possible.

Note the peculiar construction of the radiator body of this furnace. The entire fire-pot is cast in two separate sections and the radiator casting is deeply corrugated and divided in the center so as to allow for all excessive expansion and contraction which will develop when a very hot fire is being carried.

This furnace will burn either hard or soft coal or coke and will hold a long, steady fire for 12 hours at a time.

By thus specializing and separating the particular features which are most desirable to meet the general conditions of climate in our country it can be seen very clearly that we can embody in two furnaces all of the best points of design which render each especially well adapted for the particular requirements which it will have to meet. The question now remains—Which of these furnaces is best adapted to your particular case? You can very easily decide this after carefully reading what has been said, and you can rest assured that in ordering either of these furnaces you will be securing the entire benefit of the long and careful study which our engineers have given to this problem. If you install one of these furnaces in your house we can safely say that you have a furnace which represents the very top-notch of engineering perfection.



The general principles set forth in the foregoing pages have all been recognized by heating engineers for many years past. However, it remained for us to properly analyze this problem and demonstrate the fact that if a furnace is to give the most efficient results it must be designed for the special conditions which it is to work under. We have divided these conditions into two classes, and from our long experience in this heating business we are sure that there is no need for any further division. By specializing on these two particular furnaces and pushing their best features to the limit, at the same time cutting out all undesirable features, we can place these furnaces before our customers with the absolute assurance that they will give perfect satisfaction.

Prices below are F.O.B. our Factory in Mich. Will quote Freight Prepaid or F.O.B. Chicago.

No.	Size of fire-pot	Size of casing	Height	PRICES AND DIMENSIONS.			Price without casing	Price with double-lined casing.
				Capacity in cu. feet	Weight			
20	20-in.	34-in.	48-in.	8,000	700 lbs		\$27.50	\$34.25
22	22-in.	40-in.	52-in.	10,000	850 lbs.		33.50	40.90
24	24-in.	44-in.	54-in.	14,000	1,000 lbs.		39.85	46.95
26	26-in.	48-in.	56-in.	18,000	1,200 lbs.		47.95	55.85
28	28-in.	50-in.	58-in.	22,000	1,400 lbs.		60.50	69.25

CHICAGO HOUSE

• CHIC

CAPITAL STOCK AND SU

Certificate

Agreement

365 DAYS FREE

It is hereby guaranteed that this Heating Plant sold nineteen hundred and to Mr. be furnished in absolutely brand new material, perfects of any kind, and that the price of this Plant, a radiation, size boiler, etc. is lower than can be regularly.

Also that this Plant is installed according to our plan which radiators are placed to the temperatures specified without undue forcing of the fire.

It is also agreed that if this Plant after being installed not prove to be entirely satisfactory and capable of the aures specified, we will, if the purchaser so desires, from the date of sale of this Plant, cheerfully give the material to us, and we will refund the purchase price, minus freight charges.

Signed Chicago House Wre
Chicago, Ill.

HOUSE WRECKING CO.
CHICAGO.
AND SURPLUS \$1,000,000.

ante No. _____

Bill of Guaranty

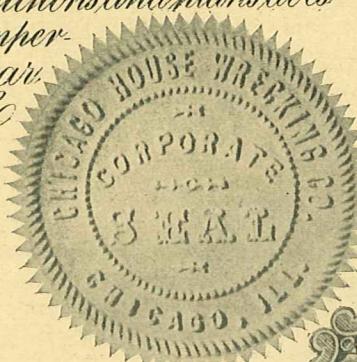
FREE TRIAL OFFER

Plant sold this _____ day of _____

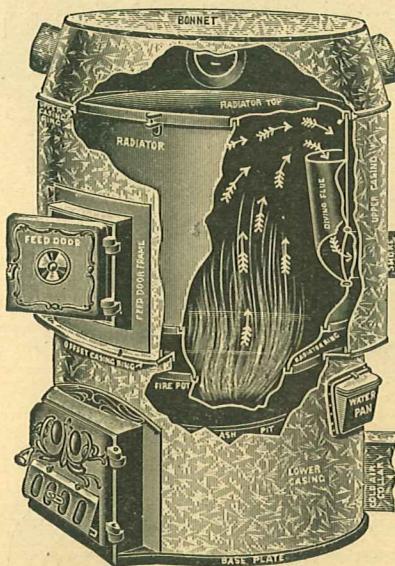
of _____ A.D. 1810
is al perfect and free from flaws in castings or other de-
Plan, considering the quality of material, amount of
regularly secured of any other concern in the United States.
so our plans and instructions will heat the rooms in
recised in our contract in all conditions, of weather

q installed according to our instructions, and plans, does
able of heating the rooms to the temper-
desires, any time within one year,
give permission to return all
purchase price and stand all re-

Wrecking Co.
of Ill.



Our Whirl-Pool Draft Furnace



FEATURES

1. Burns anything combustible. Hence low cost of fuel.
2. Quick results from firing. Hence absolute independence of sudden temperature changes.
3. Whirling draft. Hence full heat value of fuel entirely obtained
4. Very high ash pit. Hence grates can not possibly burn out.

With the foregoing facts fully in mind it is not hard to appreciate the high degree of efficiency which is attained by our "WHIRL-POOL" DRAFT FURNACE shown in the accompanying illustration.

For efficiency and durability under the changeable conditions outlined in the foregoing, and lowness of cost we back this furnace against anything ever before offered. Requiring heat one day, none the next, only enough to take the chill off the rooms in the early morning, and so on, this furnace shines out above all others. A handful of wood, cobs, newspapers, or anything combustible will take the chill off your rooms in 10 minutes, and, where wanted for a long time, the fire can be kept so low that seemingly no fuel is consumed. However, we do not wish to convey the impression that this furnace is exclusively a wood burner. This is one of the very points on which our designers spent their utmost efforts, and we have produced a furnace which will take the chill off your rooms with a few handfuls of shavings or will take on a heavy hard or soft coal fire to provide for a sudden drop in the mercury with just as much indifference.

QUICK RESULTS FROM FIRING, AND HIGH POINT OF EFFICIENCY IN A VERY CHANGEABLE CLIMATE. Those are the points which our engineers have hammered on to the limit. If these are your climatic conditions you will make no mistake in selecting this furnace. As to their general details, no stone has been left unturned. The large, roomy combustion chamber permits the burning of anything combustible. The large firing-door will allow very large stumps or chunks of wood to be thrown into the fire without difficulty. The fire-pot has been molded in two separate parts, which does away with all danger of cracking and allows sufficient leeway for expansion and contraction when the fire is starting up or cooled off suddenly. Also note the deep ash-pit and the large casing for the circulation of the cold air.

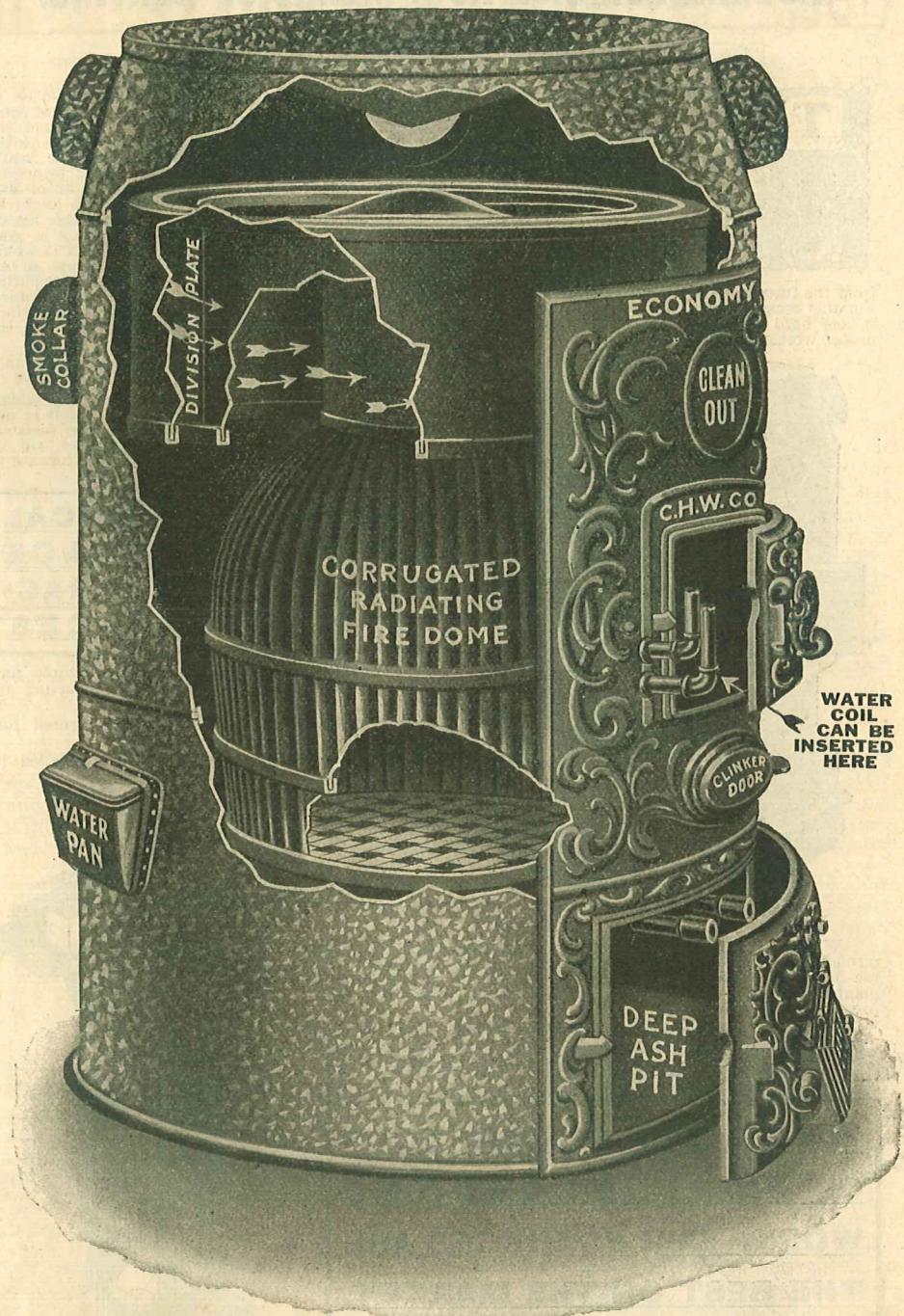
We furnish with each furnace a complete set of trimmings such as a regulator plate with chains and pulleys, etc., shaker, poker, check damper, cement and water-pan.

PRICES AND DIMENSIONS.

No.	Size of fire-pot	Size of casing	Height	Capacity in cubic feet	Shipping wt. including casing	Price without casing	Price with double-lined casing
434	20-in.	34-in.	48-in.	8,000	525 lbs.	\$24.95	\$31.00
438	22-in.	38-in.	50-in.	10,000	750 lbs.	31.00	38.75
442	24-in.	42-in.	52-in.	14,000	825 lbs.	37.00	44.75
446	26-in.	46-in.	54-in.	18,000	970 lbs.	45.00	53.25
448	28-in.	48-in.	56-in.	22,000	1125 lbs.	55.75	63.75
458	30-in.	58-in.	56-in.	30,000	1275 lbs.	67.75	77.50

The above prices are all f. o. b. cars our factory. We will quote you prepaid prices to your station on request.

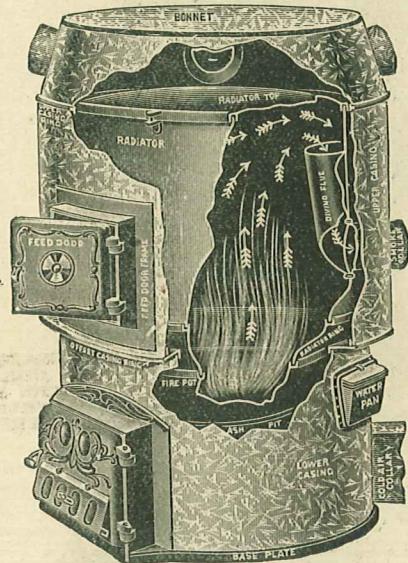
OUR ECONOMY FURNACE



HEAVY CASTINGS SUBSTANTIALLY BUILT NOTHING
CHEAP IN ITS CONSTRUCTION.

HOT AIR FURNACE AS A MEANS OF HEATING.

THE simplest conception of the principle on which a hot air furnace works would be to imagine a stove located in the basement of a building entirely inclosed in a box of some kind with an opening in the bottom so that the air can freely circulate around the stove and become heated and then have this box with pipes leading from it to the various rooms. This is, in fact, nothing more or less than what hot air furnace really is and this is the simplest manner of describing it. There are no difficult principles whatever involved in this method of heating and while it is the simplest system of any known, it is, at the same time, the most deceiving as to the results which might be expected from certain arrangements of piping under certain conditions. The reason for this is, that the outside conditions have always to be met with. If the building is very loosely constructed and there are many openings around the windows and doors, it would not take a very strong wind from any one direction to counteract the current of air which should pass through the furnace to the rooms and instead of the air circulating from the furnace to the rooms, the pressure of the wind will force the air back through the furnace. For this reason the furnace never works properly in a building which is of loose construction and which is very hard to heat. Also the arrangement of the piping and registers have a good deal to do with the proper working of the furnace.



Our Whirlpool Draft Furnace.

We furnish the wall stack or pipe in sections and it can be pushed up between the lath and plasters from the basement of the building in each case and when you get it up to the proper point in the room up stairs, you can very easily connect on the proper registers without any difficulty.

There are no solder joints or anything of that kind needed in connecting up a furnace; simply fasten the joints of wall stack to the register, etc., with cotter pins, which serve to hold the register and piping in place.

It would be too lengthy a matter for us to go into all the details in these pages.

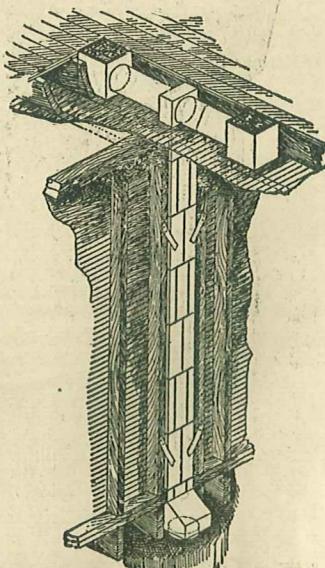
We will simply let this matter rest with the assurance that if the designing of the plant is left in our hands, we will locate the furnace and registers properly so that your particular conditions will be properly met with and we will guarantee the furnace to do all that is claimed for it.

FOR THE ECONOMICAL BUILDER A FURNACE HAS MANY ATTRAC- TIVE ADVANTAGES

As to connections, etc., these are very simple and they are much on the same order as connecting up an ordinary stove pipe.

These details have been very carefully figured out by our engineers.

We wish to say that a furnace can be installed in any old building as well as a new one.



Perspective View Showing How Stack
is Connected in Wall.

**WHEN WE DESIGN YOUR
OUTFIT IT IS BOUND TO
WORK. OUR FURNACES ARE
THE BEST ON THE MARKET.
WRITE FOR OUR CATALOG.**

|| :: PUTTING THE FURNACE IN :: ||

Simply start at the furnace and put on the pitch bonnet casing collars, and then follow on with one joint of pipe after another until the last register is set in place.

To explain the actual construction of a furnace, it may be divided into three principal parts. First, the fire pot, which constitutes the actual body of the furnace proper, wherein the fire burns, and this is practically nothing more or less than an ordinary stove, and is just as simple in every way.

The second part is the radiator ring, which encircles the top of the furnace. This ring has a division plate in the rear, so that the burning gases have to travel clear around this ring before going out into the chimney. It is one of the principal heating surfaces which heat the air in passing through the furnace.

The third part is the casing which encircles the entire furnace, and in this we would also include the bonnet which caps the furnace, and this bonnet has a pitched conical side and it is out of this pitched side that all pipes are taken leading to the various registers.

The casing is made out of galvanized sheet iron. The fire pot of the furnace is made out of cast iron, and the radiator ring in our Economy furnace is made out of cast iron top and bottom pieces, with sheet iron sides of heavy gauge. Our Whirlpool furnace does not have the radiator ring, but to make up for this it has a very large radiator steel radiator body, which is kept constantly heated, and this is more desirable when fuel of every miscellaneous description is to be burned in the furnace. The pitched bonnet is very clearly shown in the cut on the preceding page of our Whirlpool furnace, and the radiator ring, etc., is shown clearly in the cut of our Economy furnace.

There is another circular casting at the bottom of the furnace, called the base ring, and this is simply a frame around which the casing sets in place. It is a sort of support for the casing.

SIMPLER THAN PUTTING UP A STOVE.

The matter of setting up this furnace is as simple, in fact, simpler than setting up a stove. The first thing you do is to get the body of the furnace set in place and built up in a proper way, and everything bolted properly. Then get the casing unpacked and fitted in place. Put on the top bonnet with bolts, and that is all there is to it, except connecting up the smoke pipe, which needs no explanation.

Then comes the matter of cutting the holes in the pitched bonnet top to connect the hot air pipes. The exact location and the exact size of all these holes are shown very clearly in our blue print plans, which we furnish with each furnace equipment, and you can simply pick out the casing collars out of your shipment, one of which is furnished for each size pipe leading out of the pitched bonnet, and you can take any sharp steel point and mark the exact size that the hole should be cut. After this is cut out, set the pitched bonnet collars in place as follows:

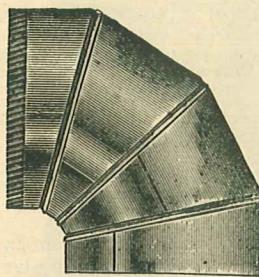
By examining one of these collars you will note that the side that is supposed to fit into the casing is slotted all around to the extent of about $\frac{3}{4}$ " from the end. Take every alternate piece and bend it back, leaving the intermediate pieces project straight out. Then insert it into the opening that you have cut in top of the casing, so that these pieces that you have bent outwards press against the outside of the casing and you can then bend the inside pieces over so they will press against the inside of the casing. You have then the collars set in place and something to start from. These collars, of course, are exactly the same size as the various size pipes leading out of the furnace, as shown in our plans, and you can simply put on a joint of pipe of proper size and continue until you come to the point where the register is to be set in the floor. Or, if it is a second floor register that is to be supplied, you will have a wall stack already set in place, to which connection is to be made. Connections are, as a general rule, made to all wall stacks with our No. 8 boot is shown in figure (1.) It is very simple to understand this boot. The wall stack comes right down and connects with the rectangular top and the hot air furnace pipe is connected on to it from underneath at the circular collar with an adjustable elbow.

THE ADJUSTABLE ELBOW.

Without this it would be almost a practical impossibility to do a good, neat job of piping in connecting up a furnace. A close examination of the elbows for connecting up this hot air pipe, as furnished to you in your furnace outfit after you receive it, will very soon make clear to you how it is possible to make practically any angular turn with this pipe leading from the furnace. Note that these elbows can be adjusted so that they will turn any angle from a straight piece of pipe to a full right angle of 90 degrees, and they can be so adjusted to form any angle in between these two extremes. You can very readily see that it is not a difficult matter to make these connections without any trouble whatever. Also, if it is necessary in running the pipe to make any angular turn of any kind in order to get around a brick pier or a chimney in the basement, it can be very easily turned at a close angle by using an adjustable ell at some intermediate point in the pipe.

Figure No. 1 shows a No. 8 boot; a fitting extensively used in this work.

This boot is used when it is desired to reach a second floor register, or if it is desired to reach a first floor wall register, as this rectangular top connects with the square-cornered pipe which is used going up between the walls. If the line of piping feeds a second floor register, it is necessary, of course, to use wall stack in the wall, and we furnish this stack of proper size, as is shown in our blue print plans, depending upon the size register it is supplying. We furnish this wall stack in assorted lengths ranging from 3 inches long to 2 and 3 feet, so that when you get to the end you can use the small pieces to make close adjustment. This saves the necessity of cutting up this square-cornered pipe.



Adjustable Elbow

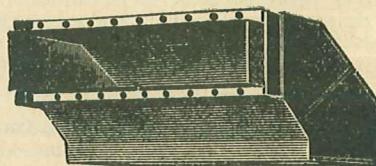
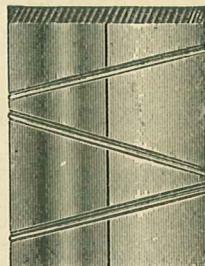


Figure 3.

Figure 2 shows our No. 14 stack head, which is used for a second floor register. It is laid flat between the joints with the square flange projecting up and fastened to the opening in the floor and the register sets right into this square opening.

It is necessary to use a square-cornered stack elbow to turn down when using this stack head, as shown in figure 3.

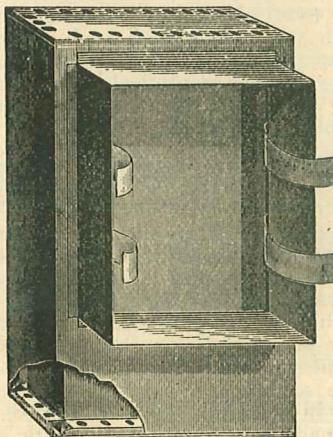


Figure 4.

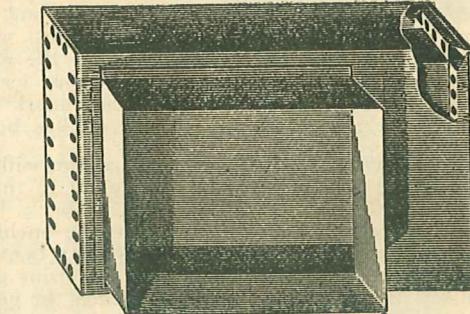


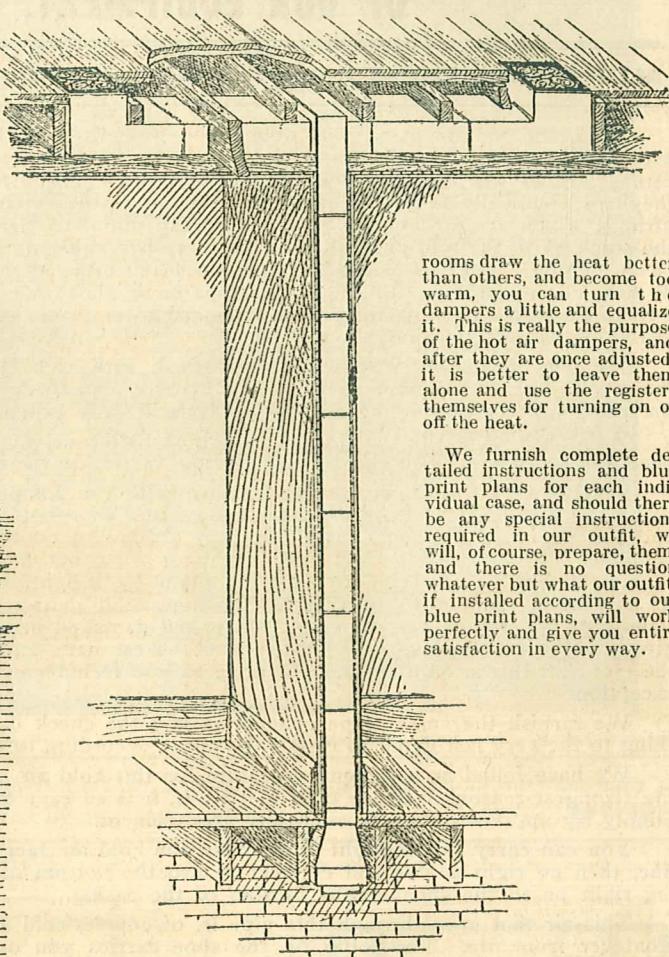
Figure 2.

Figure 4 shows our No. 10 stack head. This is used for wall registers, and is supposed to set in an upright position. You will note the ring clasps as shown in the illustration, which are for the purpose of holding the wall register in place. This stack head is always used for wall register. There are other various fittings

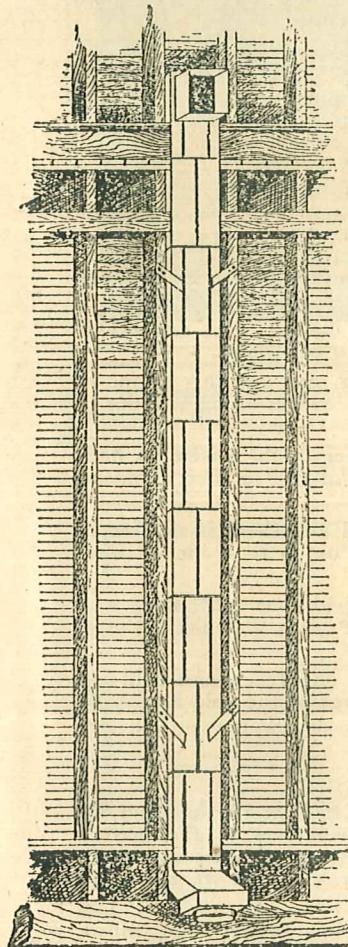
which are listed in the following pages, all of which are variously understood, and a little careful thought will very easily determine which of these fittings you need

STACK AND FITTINGS.

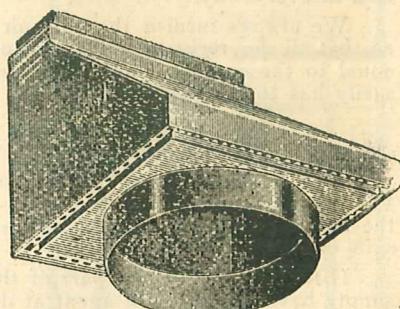
Each hot air pipe in our furnace equipment is furnished with a hot air damper, located near the furnace so that you can control the temperature in your various rooms, and if there are any rooms you want heated to a higher temperature you can divert the current of air into such rooms by shutting it off in the others. Also, each register in our furnace equipment is provided with a shut-off, which can be operated in the room. This avoids the necessity of going down into the basement to operate the dampers in the pipes. The dampers in the pipes are generally used for a sort of permanent adjustment. In other words, after you got the furnace set up, have all the hot air dampers open. Then, if in a course of a week after you get the furnace going, you find that some



Showing Stack and Fittings in Building



Showing Stack, Boot and Stack Head in Partition



NO. 8. BOOT WITH COLLAR

Figure 1.

rooms draw the heat better than others, and become too warm, you can turn the dampers a little and equalize it. This is really the purpose of the hot air dampers, and after they are once adjusted, it is better to leave them alone and use the registers themselves for turning on or off the heat.

We furnish complete detailed instructions and blue print plans for each individual case, and should there be any special instructions required in our outfit, we will, of course, prepare them, and there is no question whatever but what our outfit, if installed according to our blue print plans, will work perfectly and give you entire satisfaction in every way.

NOTHING CHEAP ABOUT THE CONSTRUCTION OF OUR EQUIPMENT.

ALL FITTINGS LINED WITH CIRCULATING AIR SPACE—FIRE IMPOSSIBLE

As to the equipment, you no doubt have already noticed that all of these furnace fittings shown in these illustrations, and also listed in this catalogue, are double fittings. They are made of double sheet iron with an air space between, so that they are practically fireproof, and if you will note the small openings in all these fittings, which are air holes where the air can circulate clear from the bottom of the stack up to the top, you will see that there is a constant circulation of air going on at all times, and this makes the stack cool and prevents any danger of fire. We do not sell any outfits with single wall pipe or single fittings of any kind, and it is well to keep this fully in mind when comparing our prices on our equipments with any other figures you may receive.

We indicate on our plan which we furnish with each Hot Air Furnace which we sell, the exact size pipe to use in each case; also the proper size register and the exact manner of running all the pipes, as already explained.

We figure from the information which you give us, the size furnace you will need and we make you the lowest proposition we can on the complete equipment.

THE ONLY ITEM we do not furnish with the complete furnace equipment that we quote you on, is the Cold Air Connecting Pipe between the Cold Air Face and the Furnace. We, of course, are very willing to quote you on the complete equipment, including this Cold Air Conductor Pipe, but large plants outside Chicago, where it is necessary to ship the plant by freight, we do not recommend its use, for the simple reason that it is an impossible matter to ship this very large sized pipe without its becoming dented up and damaged in transit. We, of course, give you the full benefit of its omission in the estimate, and our estimate explains the fact that this is omitted and our price to you includes everything with this one exception.

We furnish the smoke pipe connection and the check damper, etc., and everything to the very last detail to install the outfit, according to our plans.

We have found an excellent substitute for this cold air pipe and this is one of the strongest reasons why we omit it, that is, it is so easy to get along without it. Simply rig up an ordinary wooden box arrangement.

You can carry this straight down from the cold air face to the basement floor line, then go right across and connect it into the bottom of the furnace, connecting right on to the shoe on the bottom of the casing.

This air that goes through this pipe is, of course, cold and there is no danger whatever from fire. The collar on the shoe carries you out 6 or 8 inches from the furnace, and at this point there is no danger.

This wooden box arrangement is used practically by all our customers who have their plants shipped any considerable distance and it gives absolute satisfaction in every way.

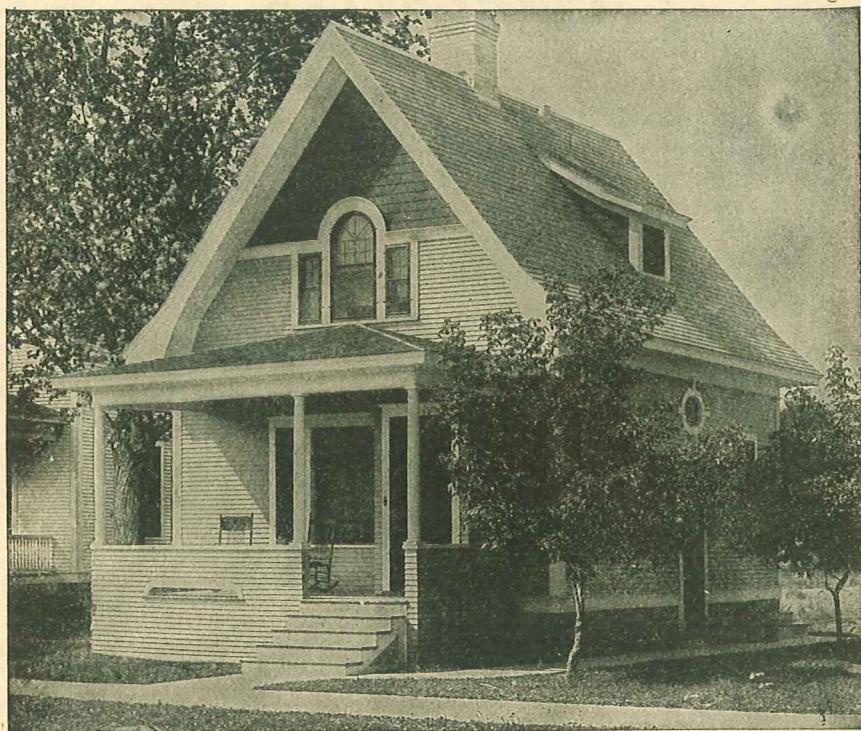
We always furnish the cold air face of proper size to supply enough cold air, so that all the registers will be properly supplied and the area of the cold air face is equal to the combined area of all the hot air registers on the plant, which necessarily has to be supplied.

OUR GUARANTEE

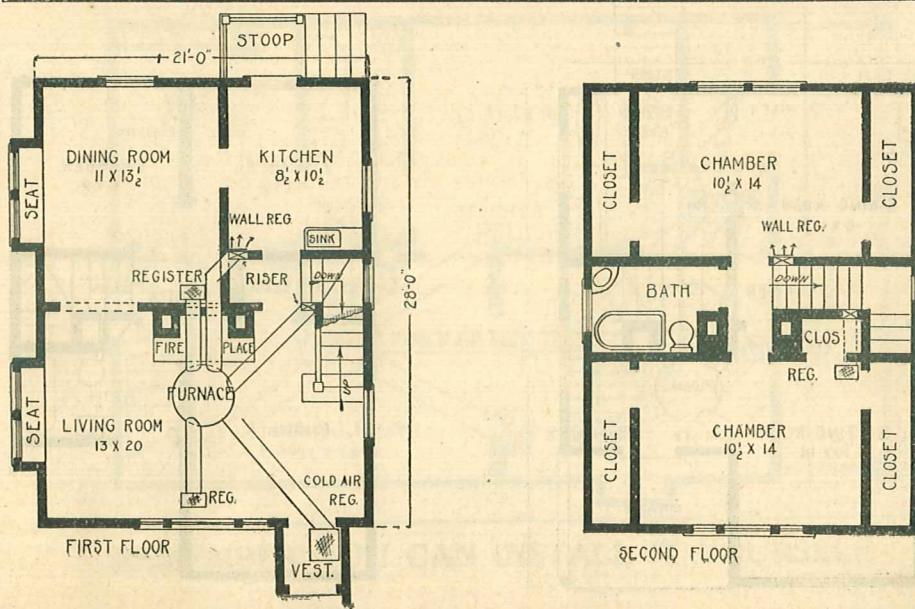
We absolutely guarantee every furnace which we sell to heat the building for which it is figured, so that you are taking no chances whatever in the matter. We guarantee the circulation to be perfect to all the registers, also we guarantee the entire equipment to be brand new and perfect in every way and we guarantee safe delivery.

If for any reason any part of the equipment should become damaged in transit, simply have your freight agent at destination make an acknowledgment of the fact on the expense bill and we will take the matter up with the railroad company and see that settlement is made in full. We will not delay you in duplicating the parts, but will send you new parts to replace the damaged ones immediately.

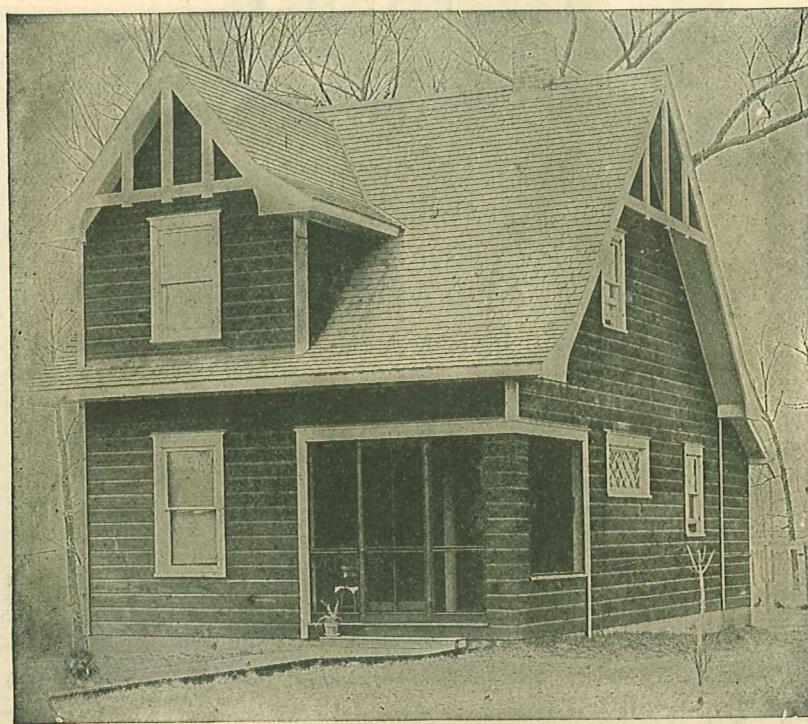
HERE IS ONE IN IOWA



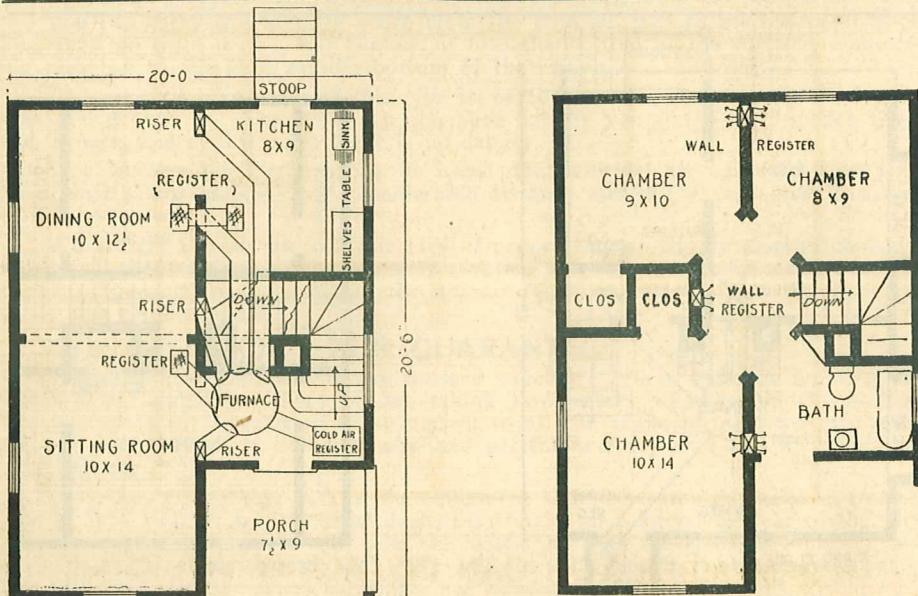
We completely equipped this Cozy Little Home in Iowa with one of our "Economy" Furnaces, No. 20 and all of the necessary apparatus for..... \$68.00



THIS ONE IN OHIO



We furnished this Cottage in Ohio complete with one of our "Economy" Furnaces and all equipment for **\$66.50**, guaranteed temperature 70 degrees in all the rooms connected with the Furnace.



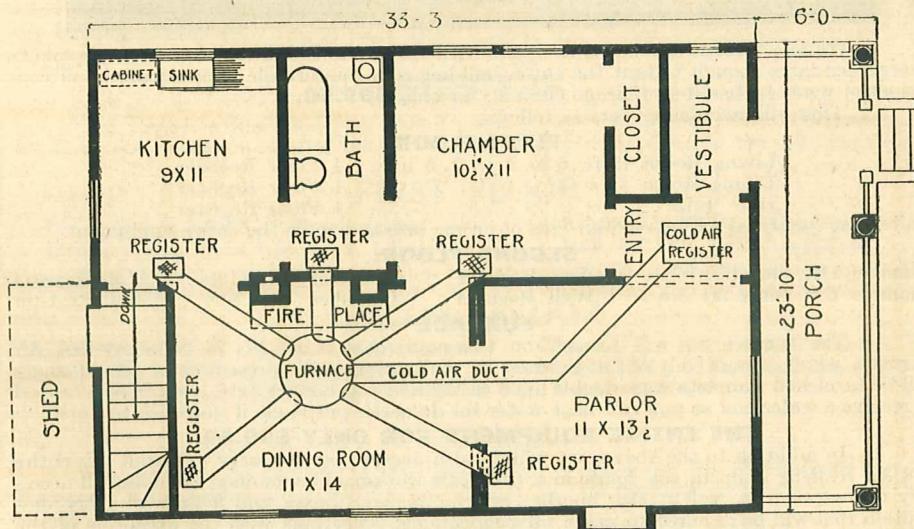
FIRST FLOOR

SECOND FLOOR

HERE IS ANOTHER IN FAR AWAY CALIFORNIA



This One in California was completely furnished with one of our "Whirlpool" Draft Furnaces, No. 434, and all the necessary additional equipment, for a sum of **\$48.10.** Not much more than the cost of a good heating stove.



REMEMBER YOU CAN INSTALL IT YOURSELF

HOT AIR HEATING EQUIPMENT

COMPLETE FOR THIS MODERN
EIGHT-ROOM HOUSE, ONLY **\$99.50**



We can furnish this house complete with one of our brand new furnace equipments guaranteed large enough to heat the entire building to a comfortable temperature in all conditions of weather, based on Chicago climate, for only **\$99.50**.

This will include registers as follows:

FIRST FLOOR:

Living Room 12 ft. 6 in. x 15 ft. 6 in.	1 Floor Register.
Dining Room 11 x 14	1 Floor Register
Hall 9x15	1 Floor Register

Hall to be furnished with a cold air face of proper size to handle the entire equipment.

SECOND FLOOR:

Chamber 11ft. 9in.x13ft. 6in....	1 Wall Register	Chamber 11ft.x14ft....	1 Wall Register
Chamber 6 ft. 6in.x 9ft. 3in....	1 Wall Register	Chamber 9ft.x10ft....	1 Wall Register

FURNACE

The furnace we will furnish on this equipment is our No. 24 Economy Hot Air Furnace, which is positively one of the best on the market at the present time. This furnace will be furnished complete with double lined casing and top bonnet, etc., and is also tapped to receive a water coil so you can heat water for domestic purposes, if you wish to do so.

THE ENTIRE EQUIPMENT FOR ONLY \$99.50.

In addition to the above, we will furnish everything necessary to install this entire Hot Air Heating plant in this house in a first-class workmanlike manner, including all necessary tin hot air pipe, wall stacks, booths, offsets, register boxes and fittings of every description that will be required to make all connections; everything with the exception of the cold air connecting pipe between the furnace and the cold air face. This you can build yourself out of an ordinary wooden box according to instructions which we furnish.

We also furnish with this outfit the smoke pipe connection between the boiler and the chimney, and dampers for all the hot air pipes.

NO. 26 ECONOMY FURNACE

AND ALL NECESSARY EQUIPMENT FOR THE HOT AIR HEATING OF THIS HOUSE, ONLY **\$116.55**



For only \$116.55 we can fit this house out, complete with a modern, up-to-date **Hot Air Heating Equipment**, including a register in every room. This is a rather large size house, 25 ft. wide by 36 ft. deep and contains 7 rooms; bath-room and two halls.

REGISTERS.

The Registers furnished with this Equipment are brand new Black Japanned Hot Air Registers with shut-off attachments. The registers will be placed in the following rooms:

FIRST FLOOR

Living Room 14x15, 1 floor register. Kitchen 9x10 ft., 1 floor register.

Dining Room 13 ft. 6 in. x 14, 1 floor register. Hall 8x12 ft., 1 floor register.

One cold air face, also to be placed in this hall of proper size to take care of the apparatus.

SECOND FLOOR

Chamber 11 ft. 6 in. x 12 ft., 1 wall register. Chamber 8 x 12 ft., 1 wall register.

Chamber 8 x 11 ft. 6 in., 1 wall register. Chamber 14 x 15 ft., 1 wall register.

Bath-Room 5 ft. 6 in., x 8 ft, 1 wall register.

FURNACE.

The Furnace we include in this equipment is one of our **No. 26 Economy Hot Air Furnaces** with double lined casing, top bonnet and all necessary attachments, including smoke and pipe outfit, dampers, etc. and chain regulators.

In addition to the above we will furnish everything to complete the entire equipment with the exception of the cold air connecting pipe between the furnace and the cold air face. This you can build yourself out of an ordinary wooden box according to instructions which we furnish.

HOW TO SECURE OUR ESTIMATE.

First get our information blank. Read this information blank over very carefully and answer every question as fully as possible. Do not slight any of these questions as it is necessary for us to have all this information in order to properly determine the size furnace you will need, the size pipe in each room, where the registers should be located, etc. If any of the question in regard to the direction of the winds, the construction of the walls, or concerning the surroundings, etc. are slighted we of course will not be in position to figure accurately the size plant you will require.

In addition to the information called for on this blank it is necessary for us to have a small sketch of the floor plan of your house, something similar to the plans shown on the forgoing pages. This does not need to be drawn to scale; you can sketch it off with a pencil, and as long you indicate the exact size and location of each outside door and window on this plan, and mark the name of each room, giving us the size of same, this is all we will require. You might also mention any rooms which you do not wish to heat.

When you have this information blank properly prepared you can mail it to us and we will immediately turn the entire matter over to our engineers who will carefully go into details and figure out the exact size registers you will require in each room, just where it should be located, etc., and we will make you an interesting proposition on the entire outfit by return mail. We, of course, will be glad to have any suggestion which you may wish to offer so that we can give same their due consideration.

We make no charge for this Estimate.

This service on the part of our engineers is given absolutely gratis to our customers. We are so positively sure that we will have your order on the basis of the prices which we are in a position to quote you, that we are willing to go to all this trouble for nothing if you are convinced that it is not to your interest to favorably consider our proposition.

After we have our estimate completely prepared we then submit our proposition to you, and after it meets with your entire approval, you send us in your order with a remittance of about \$25.00, to bind the bargain, and we then turn the entire proposition over to our Engineering Department who again go into the matter and carefully lay out the complete blue print plans of the entire apparatus showing just how all piping will be run, etc. In addition to these blue prints we furnish you all the necessary instructions covering every connection on the entire plant.

It is in the designing of the plant that we spend the greatest time and effort, and all the information you furnish us is carefully considered, so that you can readily see the importance of giving us all the information possible if you wish to have your furnace designed to give the most efficient results.

After these plans are completely prepared we make up the entire bill of material in accordance with these plans and we send the order through so that when the plant reaches you it will correspond exactly with the blue prints which we have by this time mailed you. You will know just where to start, and you can follow our blue prints right through until the very last register is connected up.

WE FURNISH EVERYTHING

We are in a position to furnish you with absolutely everything that will be required to completely equip your home with one of these furnaces, to the very last detail. We have given just as much careful thought and study to the manner of installing this equipment as we have to the furnaces themselves. Every fitting and register, etc. is designed in the most scientific manner possible. The wall pipes which we furnish with our furnaces are all so constructed that there is 1 inch air space surrounding the entire pipe, and the registers are especially designed to work in harmony with this feature, being also of double construction, so that there is constantly going on a complete circulation of air between the two casings at all times. The air entering at the bottom of stack through holes provided for the purpose, and passing out at the top through similar holes in the floor and wall registers, forms an absolutely fire-proof insulator and does away with any possible danger. This feature can readily be understood by referring to the accompanying illustrations which show a section of the wall casing and two of the numerous forms of registers which are required in the average dwelling.

There is another feature which we have given especial attention in designing this apparatus, and that is

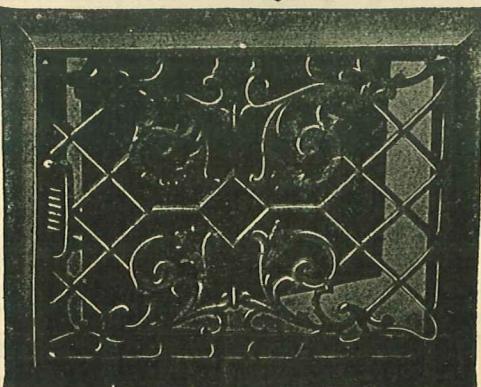
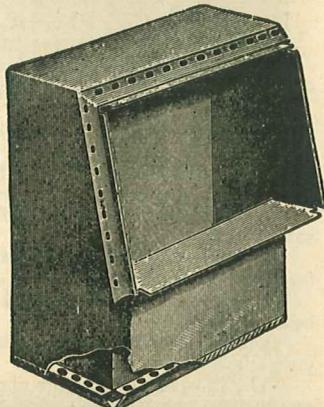
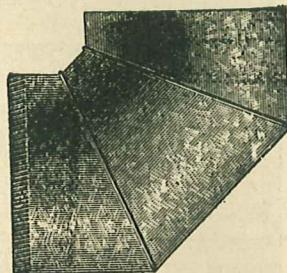
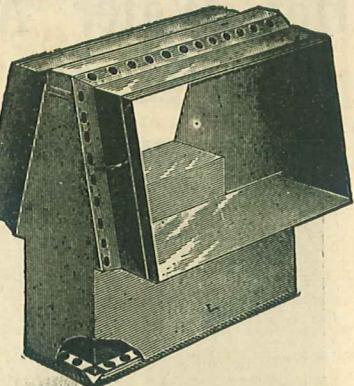
SIMPLICITY OF ASSEMBLING.

We realized fully that these furnaces, in the majority of cases, would have to be set up by our customers themselves, and we have arranged the sections in such a simple manner that a fourteen-year-old boy could, without any difficulty, set up the entire apparatus with the aid of the very clear instructions which we furnish. The item of labor in installing one of these furnaces is practically not to be considered. You can set the entire plant up in five or six evenings, and the work is so easy that it is mere pastime. Furthermore, when you get it installed you will have a furnace which you can depend upon to give results, and you can rest assured that it will be installed right. You cannot possibly go wrong; the exact location of every register and the exact size of every pipe is carefully determined by our highly skilled engineers who carefully consider all of the conditions as explained in the information blank which you furnish us to get our estimate, and everything is determined with scientific accuracy. If you let the job to your local tinner who has not had the scientific training necessary for designing a furnace of this kind he would probably locate the register in some corner of the room, which might look all right to him but under the conditions which the furnace would be working you would find after you tried to heat this room in certain kind of weather that it would be absolutely impossible to get the air to circulate in this direction. For this reason it is a very important matter where these registers are located, and the prevailing winds in your locality, the construction of your building, the surroundings, etc. all have to be carefully considered and weighed.

We take this entire responsibility upon ourselves, however, and when you get the furnace and your working drawings, this has all been carefully figured out for you, and all you have to do is to follow our blue prints.

WE LOAN YOU THE TOOLS.

We loan you all necessary tools, of which there will be very few, required to connect up all the piping. You will be at no expense whatever for these tools except for the expense of return freight charge.



PIPE AND CASING.



NEW STANDARD STEAM, GAS AND WATER PIPE.

Black and Galvanized.

Always in stock. Every piece carefully tested. Unless otherwise ordered, black pipe, random lengths, with threads and couplings, will be shipped.

Prices subject to change without notice

Nominal Inside Diam.	Actual Outside Diam.	Thickness	Nominal Weight Per Foot	No. of Threads Per Inch of Screw	Price Per Foot Black Pipe	Price Per Foot Galv. Pipe
3/8 inch	0.67 inch	.001 inch	0.56	18	\$0.021	\$0.032
1/2 "	0.84 "	.109 "	0.84	14	.03	.042
5/8 "	1.05 "	.113 "	1.12	14	.032	.052
1 "	1.31 "	.134 "	1.67	11 1/2	.052	.062
1 1/4 "	1.66 "	.140 "	2.22	11 1/2	.07	.08
1 1/2 "	1.9 "	.145 "	2.68	11 1/2	.08	.10
2 "	2.37 "	.154 "	3.61	11 1/2	.11	.162
2 1/2 "	2.87 "	.204 "	5.74	8	.17	
3 "	3.5 "	.217 "	7.54	8	.23	
3 1/2 "	4.00 "	.226 "	9.00	8	.28	
4 "	4.5 "	.237 "	10.66	8	.32	

SECOND HAND STANDARD BLACK PIPE.

For Steam, Water, Gas and Oil. It is of a second-hand nature, but is thoroughly practical for further use. It is all carefully inspected before shipment, being re-threaded, oiled and complete with couplings. It comes in random lengths, up to about 20 feet. We make an additional charge when ordered in special lengths, as noted below.

Pipe ordered cut to specified lengths, is not furnished with couplings.

Size Inside Diam.	Approximate Weight Per Foot	Black Pipe Price Per Foot	Size Inside Diam.	Approximate Weight Per Foot	Black Pipe Price Per Foot
3/8 inch	1/2 lbs.	\$0.012	3 1/2 inch	9 lbs.	\$0.19
1/2 "	3/4 "	.022	4 "	10 1/2 "	.24
5/8 "	1 1/10 "	.03	4 1/2 "	12 1/2 "	.28
1 "	1 1/3 "	.034	5 "	14 1/2 "	.33
1 1/4 "	2 1/2 "	.044	6 "	18 3/4 "	.40
1 1/2 "	2 2/3 "	.06	7 "	23 1/4 "	.60
2 "	3 2/3 "	.08	8 "	28 1/4 "	.67
2 1/2 "	5 3/4 "	.122	9 "	33 3/4 "	.85
3 "	7 1/2 "	.17	10 "	40 "	1.05

EXTRA HEAVY BLACK WROUGHT IRON PIPE.

Second Hand—In Good Condition.

For Ice Manufacturing, High Steam Pressure, etc.

Size Inside Diameter	Approximate Weight Per Foot	Price Per Foot
3/4 inch	1.391bs.	\$0.05
1 "	2.17 "	.08
1 1/4 "	3 "	.11

CUTTING PIPE TO LENGTH.

We make the following additional charges for threading and cutting pipe to special lengths; price quoted is per thread. Couplings for special lengths pipe will be charged for extra.

Size, Diameter	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	7	8	9
Price, per thread	10c				15c	25c	30c	40c	50c	75c	80c	90c	1.00	1.25		

WE HAVE AN ENORMOUS QUANTITY OF BOILER TUBING.

CAST IRON FITTINGS FOR WROUGHT IRON PIPE.

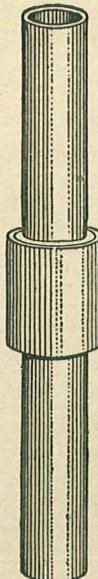
Fig.	Size, Inches.	8															
		$\frac{1}{8}$	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	$\frac{7}{8}$	$1\frac{1}{8}$								
3.	Elbows, Black.....	\$0.02	\$0.02	\$0.02 $\frac{1}{2}$	\$0.03 $\frac{1}{2}$	\$0.04 $\frac{1}{2}$	\$0.06 $\frac{1}{2}$	\$0.08	\$0.12	\$0.20	\$0.30	\$0.50	\$0.80	\$1.10	\$1.90	\$2.70	
	" Galvanized.....	0.04	0.04	0.05	0.07	0.09	0.13	0.16	0.24	0.40	0.60	1.00	1.60	2.20	3.80	5.40	
4.	Tees, Black.....	0.03 $\frac{1}{2}$	0.03 $\frac{1}{2}$	0.04	0.05	0.06 $\frac{1}{2}$	0.10	0.12	0.17	0.30	0.45	0.70	1.20	1.60	2.70	3.90	
	" Galvanized.....	0.07	0.07	0.08	0.10	0.13	0.20	0.24	0.34	0.60	0.80	1.40	2.40	3.20	5.40		
10.	Crosses, Black.....	0.14	0.14	0.18	0.18	0.22	0.34	0.44	0.64	1.06	1.50	2.60	4.50	5.60	9.80	14.00	
13.	Plugs, Black.....	0.01	0.01	0.01 $\frac{1}{2}$	0.01 $\frac{1}{2}$	0.02	0.03	0.04	0.07	0.10	0.17	0.35	0.48	0.72	1.10	2.20	
	" Galvanized.....	0.02	0.02	0.02	0.03	0.04	0.06	0.08	0.14	0.20	0.34	0.70	0.96	1.44	2.20		
11.	Bushings, Black.....	0.02	0.02	0.02	0.03	0.03	0.04	0.05 $\frac{1}{2}$	0.09	0.13	0.20	0.40	0.50	0.76	1.15	2.30	
	" Galvanized.....	0.04	0.04	0.04	0.06	0.06	0.08	0.11	0.18	0.26	0.40	0.60	0.80	1.00	1.55	2.30	
16.	Caps, Black.....	0.01 $\frac{1}{2}$	0.01 $\frac{1}{2}$	0.02 $\frac{1}{2}$	0.03	0.04	0.05	0.07	0.08	0.11	0.16	0.22	0.35	0.48	0.62	1.00	1.15
	" Galvanized.....	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.11	0.16	0.22	0.35	0.48	0.62	1.00	1.15
20.	Couplings, Black.....	0.01 $\frac{1}{2}$	0.01 $\frac{1}{2}$	0.02 $\frac{1}{2}$	0.03	0.04	0.05	0.07	0.08	0.11	0.16	0.22	0.32	0.44	0.70	0.96	1.24
	" Galvanized.....	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.11	0.16	0.22	0.32	0.44	0.70	0.96	1.24
21.	Flange Unions, Black.....	0.16	0.16	0.19	0.21	0.26	0.32	0.40	0.50	0.60	0.80	1.00	1.20	1.70	2.60	3.20	4.50
	" Galvanized.....	0.32	0.32	0.38	0.42	0.56	0.64	0.80	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
17.	Return Bends, Close, Black.....	0.08	0.08	0.09	0.10	0.12	0.17	0.25	0.50	0.75	1.00	1.50	1.50	1.50	1.50	1.50	1.50
	" Galvanized.....	0.16	0.16	0.18	0.20	0.24	0.34	0.50	0.75	1.00	1.50	1.50	1.50	1.50	1.50	1.50	1.50
18.	Return Bends, Open, Black.....	0.11	0.14	0.18	0.24	0.35	0.48	0.60	0.95	1.00	1.20	1.20	1.20	1.20	1.20	1.20	1.20
	" Galvanized.....	0.22	0.28	0.36	0.48	0.70	1.00	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
22.	Ceiling Plates, Black.....	0.05	0.06	0.07	0.09	0.11	0.14	0.20	0.27	0.36	0.50	0.60	0.85	1.30	1.60	2.25	2.90
	Floor Plates, Black.....	0.02 $\frac{1}{2}$	0.02 $\frac{1}{2}$	0.03	0.04	0.05	0.06	0.09	0.12	0.20	0.25	0.33	0.45	0.55	0.60	0.85	1.05
24.	Nipples, Short, Black.....	0.01 $\frac{1}{2}$	0.01 $\frac{1}{2}$	0.02 $\frac{1}{2}$	0.02	0.02 $\frac{1}{2}$	0.03 $\frac{1}{2}$	0.04	0.06	0.12	0.15	0.25	0.37	0.45	0.55	0.60	0.85
	" Galvanized.....	0.02	0.02	0.03	0.05	0.06	0.08	0.17	0.21	0.40	0.70	0.70	0.70	0.70	0.70	0.70	0.70
25.	Ripples, Long, Black.....	0.02	0.02	0.03	0.04	0.06	0.09	0.10	0.14	0.25	0.33	0.56	0.93	1.25	1.50	1.75	2.00
	" Galvanized.....	0.03 $\frac{1}{2}$	0.03 $\frac{1}{2}$	0.04	0.05	0.07 $\frac{1}{2}$	0.10	0.13	0.25	0.37	0.60	0.95	1.35	1.75	2.25	3.20	3.20
26.	Reducing Elbows, Black.....	0.03	0.03	0.04 $\frac{1}{2}$	0.05	0.08	0.10	0.15	0.20	0.26	0.50	0.74	1.20	1.80	2.70	4.50	6.40
	" Galvanized.....	0.04	0.04	0.05	0.06	0.08	0.10	0.15	0.25	0.40	0.60	1.00	1.40	2.40	3.50	3.50	3.50
27.	45° Elbows, Black.....	0.03	0.03	0.04 $\frac{1}{2}$	0.05	0.08	0.10	0.15	0.20	0.28	0.50	0.80	1.20	2.00	2.80	4.80	7.00
	" Galvanized.....	0.06	0.06	0.09	0.10	0.16	0.22	0.28	0.40	0.55	0.85	1.50	1.80	3.15	4.50	4.50	4.50
28.	Reducing Tees, Black.....	0.05	0.06	0.07 $\frac{1}{2}$	0.07 $\frac{1}{2}$	0.12	0.15	0.20	0.35	0.55	0.70	1.10	3.00	3.60	6.30	9.00	9.00
	" Galvanized.....	0.10	0.12	0.15	0.24	0.30	0.40	0.60	0.90	1.45	2.50	3.50	6.50	8.50	13.00	17.00	17.00
	Reducing Crosses, Black.....	0.08	0.11	0.13	0.19	0.26	0.36	0.52	0.72	1.20	1.80	2.90	5.00	7.00	13.00	17.00	17.00
	" Galvanized.....	0.16	0.22	0.26	0.38	0.52	0.72	1.20	1.80	2.90	5.00	7.00	13.00	17.00	17.00	17.00	17.00

NOTE. Reducing Tees thus $1 \frac{1}{2} \times 1 \frac{1}{4}$ are read $1 \frac{1}{2} \times 1 \frac{1}{4}$: Always give end openings first, then side openings. In ordering Reducing Crosses always mention

all openings, reading straight across, then up and down: thus: $2 \frac{1}{2} \times 1 \frac{1}{2}$ would read $2 \times 1 \times 1 \times 1$.

Greenhouse Heating Apparatus.

Boiler Flues for Piping.



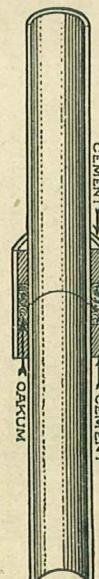
We carry a large stock of material suitable for heating greenhouses. In heating greenhouses the consideration of the cubical contents may be overlooked, as the glass exposure is so great as to constitute almost the sole cause of loss of heat. We do not consider steam in a greenhouse as good as hot water, but it has some advantages in very large greenhouses. We would, however, never recommend steam for houses having less than 2,000 square feet of glass.

In a hot water greenhouse heating system, the best thing to use for radiation is 4 inch pipe. It contains one square foot of heating surface to each lineal foot of pipe, and there is such a large volume of water held in this pipe that it is a safeguard against sudden atmospheric changes on the outside. All things considered, we consider 4 inch boiler flues the finest of all pipe to use for greenhouse heating. We furnish these boiler flues in random lengths from six to twenty feet each. They are joined together with sleeve couplings, as we show in the above illustration with calked joints. These sleeve couplings are made of larger diameter wrought iron pipe so that there is no danger of splitting them even though they are tightly packed. These boiler tubes are used in connection with cast iron greenhouse fittings with hub ends, as we show elsewhere in this catalog.

Price for specially selected boiler tubes in random lengths, thoroughly cleaned, with sleeve couplings..... 15 cents per foot

Price for the boiler tubes only, without the sleeve couplings..... 10 cents per foot.

Boiler Flue with sleeve couplings.



Sectional view showing joint

SPECIALLY THREADED BOILER FLUES.

We are also in a position to furnish these boiler flues with special casing thread, and with threaded couplings, so that they can be made up the same as threaded pipe is made and can still be used with the calked joint greenhouse fittings at the end of the run. These boiler flues are practically the same strength as wrought pipe. They are lighter and are furnished for much less money.

Price, 3½ inch, threaded as above, including the couplings, per foot..... \$0.14
Price, 4 inch, threaded as above, including the couplings, per foot..... .18

GREENHOUSE HEATING BOILERS.

We have two hundred boilers on hand, suitable for greenhouse heating, in the following types.

Cast Iron Sectional Boilers.

Locomotive Fire Box Boilers.

Horizontal Tubular Boilers.

Kroeschell Greenhouse Boilers.

Herbert Return Flue Boilers.

Price on these boilers quoted on application.

COMPLETE GREENHOUSE HEATING PLANT.

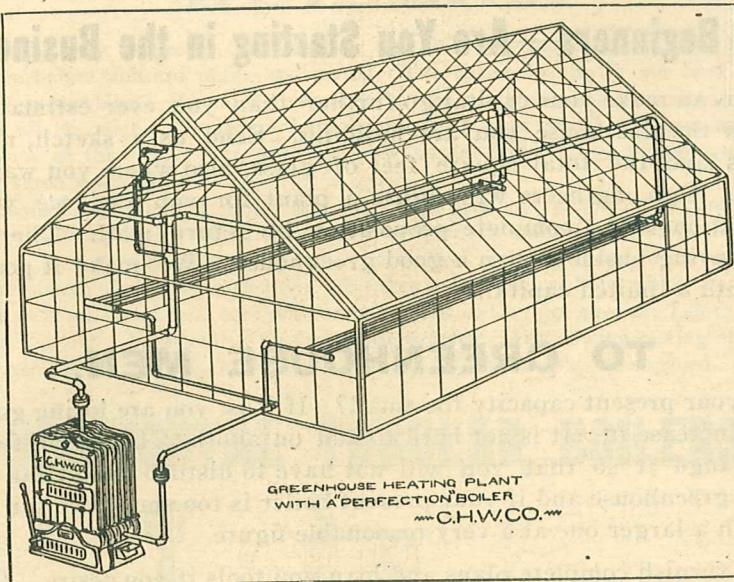
If you will send us a sketch of your greenhouse, showing the location of the benches, preferred location of the boiler, location of the door, etc., we will figure up for you a complete greenhouse heating plant, all the pipe, pipe fittings required, the boiler, with or without smokestack, and all the valves, etc., to install the complete plant and make you a special quotation.

CALCULATING THE RADIATION NEEDED.

In heating greenhouses the consideration of cubical contents may be overlooked, as the glass exposure is so great as to constitute almost the sole cause of loss of heat. To heat a greenhouse from 50 to 60 degrees night temperature in zero weather with hot water using our Mercury Heat Circulator we would figure one square foot of radiation to $3\frac{1}{2}$ square feet of glass. To heat a greenhouse from 60 to 70 degrees, one square foot of radiation to $2\frac{1}{2}$ square feet of glass. In figuring steam plants, we figure twenty-five per cent less heating surface than with hot water.

A Heating Plant For Greenhouse!

We Can Quote You a Price That Will Surprise You.



We Guarantee Every Plant We Sell.

We make a specialty of greenhouse heating plants. We have furnished all of the material and made all the plans for some of the largest greenhouses in the country.

WE FURNISH EVERYTHING

to the very last detail that you will require, and especially are we in position to quote you very low prices at this time, owing to the fact that we recently bought up, at a Receivers' Sales, an enormous quantity of greenhouse fittings which we are now disposing of at prices that do not represent the actual cost of manufacture.

By working in these fittings on your plant and our 4-inch threaded boiler flues, together with a good sound Horizontal Tubular or Fire Box Boiler, we can save you anywhere from 50 to 75 per cent on your greenhouse heating plant.

Chicago House Wrecking Co., 35th and Iron Sts., Chicago

LOW PRICED GREENHOUSE HEATING PLANTS.

To Beginners—Are You Starting in the Business?

We can make your capital go further than you ever estimated. Let us know the size house you are building. Send us a sketch, mark the benches and the total square feet of glass, also where you want boiler located. Our engineers will figure a plant for you and we will send specifications and a complete proposition by return mail. There is no better paying business than a good greenhouse. We make it possible to start with a limited capital.

TO GREENHOUSE MEN.

Is your present capacity too small? If it is, you are losing good business. Increase it. It is not hard to add on another house or two. We can arrange it so that you will not have to disturb one fitting on your present greenhouse and if your present boiler is too small, we can furnish you with a larger one at a very reasonable figure.

We furnish complete plans and loan you tools if you desire. Our very clear instructions and plans which are almost pictures, are very easy to follow and any ordinary mechanic can do the work for you.

MERCURY HOT WATER SYSTEM FOR GREENHOUSES.

We are in position to furnish the most up-to-date system of hot water heating known to engineering science at the present time.

This system combines all the advantages of a steam and hot water plant and does away with the disadvantages of both. The circulation of the system is increased over 50 per cent by using our mercury heat circulator, and by getting a much higher temperature in the water the efficiency of the plant is advanced to the highest possible point.

If your present heating plant is not large enough to heat your greenhouse properly, add one of our mercury heat circulators to your system and you will be surprised at the change which will result.

We furnish complete instructions with each mercury heat circulator showing how to make all connections, etc.

Chicago House Wrecking Co., 35th and Iron Sts., Chicago

A Boon to Greenhouse Men.

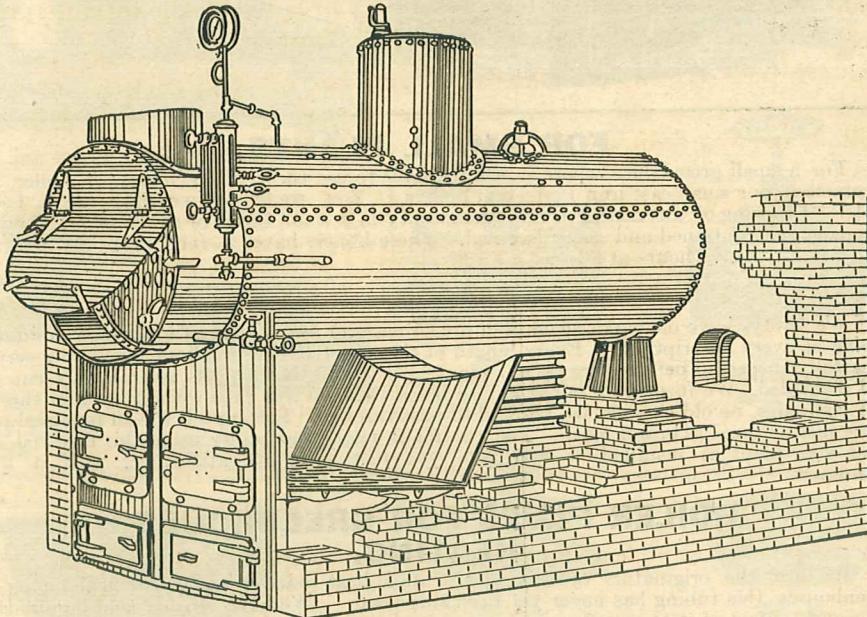
BOILERS.

From the very nature of our business, our ability to furnish you with a good boiler for a price before unheard of, is undisputed. The entire country is our field. We buy up boilers everywhere. There is a constant stream of them coming in and going out of our plant all the time. We always have in our yard from one to two hundred to select from. Some of these have seen only one year service and a large percentage of them are only three years old.

We would rather lose an order any time than send out a boiler that would not give satisfaction. Every boiler which comes into our plant is immediately subjected to a rigid inspection. If it does not stand up to the requirements, it is consigned to the scrap pile.

Those boilers which pass inspection are taken to our boiler shop, which we have fully equipped with the latest tools and devices and tested to the high pressure before they leave our plant. No boiler is allowed to go through incomplete. Any missing casting or grate bars or other parts are always secured and furnished by us, unless otherwise agreed.

HORIZONTAL TUBULAR BOILERS.

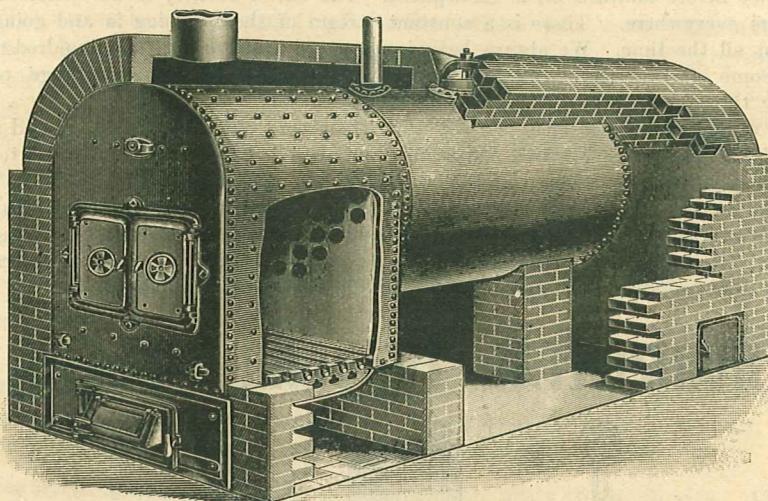


These boilers have never yet been surpassed for fuel economy and simplicity. The most expert authorities admit that this boiler stands alone on these two points.

We back this form of boiler for greenhouse heating, against any of the special boilers on the market at the present time. The only advantage that can be claimed in favor of these special boilers, is the fact that they can be set lower. We can show you how to arrange these Tubular boilers with a low setting and we will guarantee just as good results.

:: FIRE BOX BOILERS! ::

We always have on hand a large assortment of Fire Box Boilers. This form of boiler is the most economical you can install, the entire fire box being surrounded by water. Every heat unit in the fire is taken up. These boilers can be set as shown in this illustration so that the entire outside of the boiler is used as heating surface, or, you can arrange it so that no brick work whatever is required, the boiler being entirely self-contained. This latter arrangement would get away from any further expense in setting and there would be no further cost, except the actual cost of the boiler.



FOR SMALL PLANTS.

For a small greenhouse where it is impossible to use these larger forms of boiler, we recommend our small cast iron Perfection boilers. You could not possibly use a better boiler. Cracking of the casting is an impossibility in a small boiler of this kind. They are compact, self contained and easily handled. These boilers have a very deep fire pot and hold fire for twelve hours at a time.

PIPE.

We always have on hand several hundred thousand feet of second hand pipe and boiler tubing of every description. Every length of this pipe that we send out for further service is carefully inspected before it leaves our plant. All defective lengths are carefully cut out and discarded. We furnish all our standard black wrought iron pipe with brand new threads and couplings, no old threads are allowed to pass through. This pipe is for all practical purposes just as good as brand new. You can make a large saving by using this material and when your plant is installed, it will give you just as good satisfaction as if it were brand new,

BOILER FLUES FOR GREENHOUSE HEATING.

We are the originators of this idea. As a heat radiator and economical piping for greenhouses, this tubing has never yet been surpassed. We have already sold hundreds of thousands of feet of it to greenhouse men and it gives universal satisfaction. We can furnish this tubing with threads and couplings and it can be made up just like standard pipe.

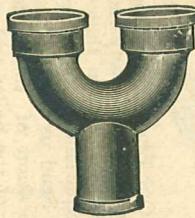
GREENHOUSE FITTINGS.

We can save you 40 per cent on your plant on the fittings alone, owing to the very low prices that we can quote you on these fittings. If you will need any fittings, be sure and send us a list and get our figures before taking any action.

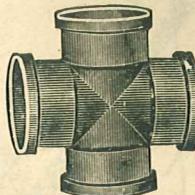
GREENHOUSE FITTINGS—ALL 4 INCH.



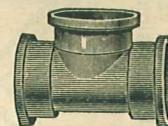
No. 100.
Return Bend,
Hub Outlet, each, 80c



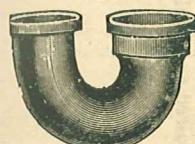
No. 101.
Return Bend,
Spigot Outlet, each, 80c



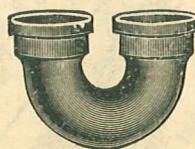
No. 108.
Cross with Hubs, ea., 80c T Branch Hub Ends, ea., 60c



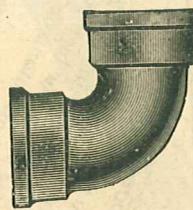
No. 109.
T Branch Hub Ends, ea., 60c



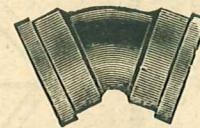
No. 102.
Return Bend,
Single Hub,
each, 60c



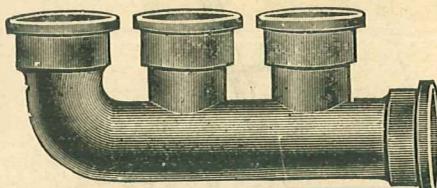
No. 103.
Return Bend,
Double Hub,
each, 68c



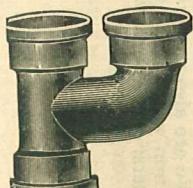
No. 110.
1/4-Bend, Double Hub,
each, 27c



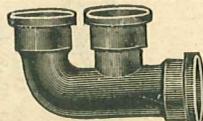
No. 111.
1/2-Bend, Double Hub,
each, 27c



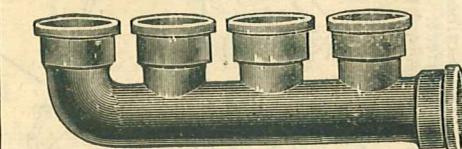
No. 104. Triple Elbows, each, \$1.25



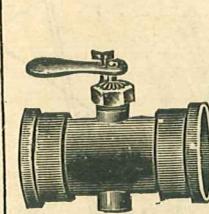
No. 105.
"H" Branch, 3 Hubs,
each, 60c



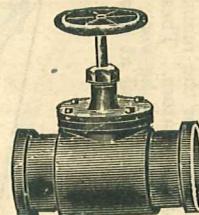
No. 106.
Double Elbows, each, 90c



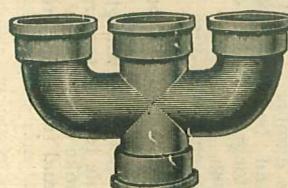
No. 112. Quadruple Elbows, each, \$1.50



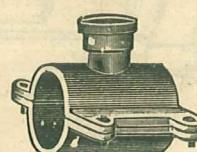
No. 113.
Greenhouse Butterfly,
Valve, each, \$3.50



No. 114.
Greenhouse Valve,
each, \$5.50

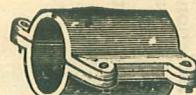


No. 107. 8-Way Branch "T," each, \$1.40



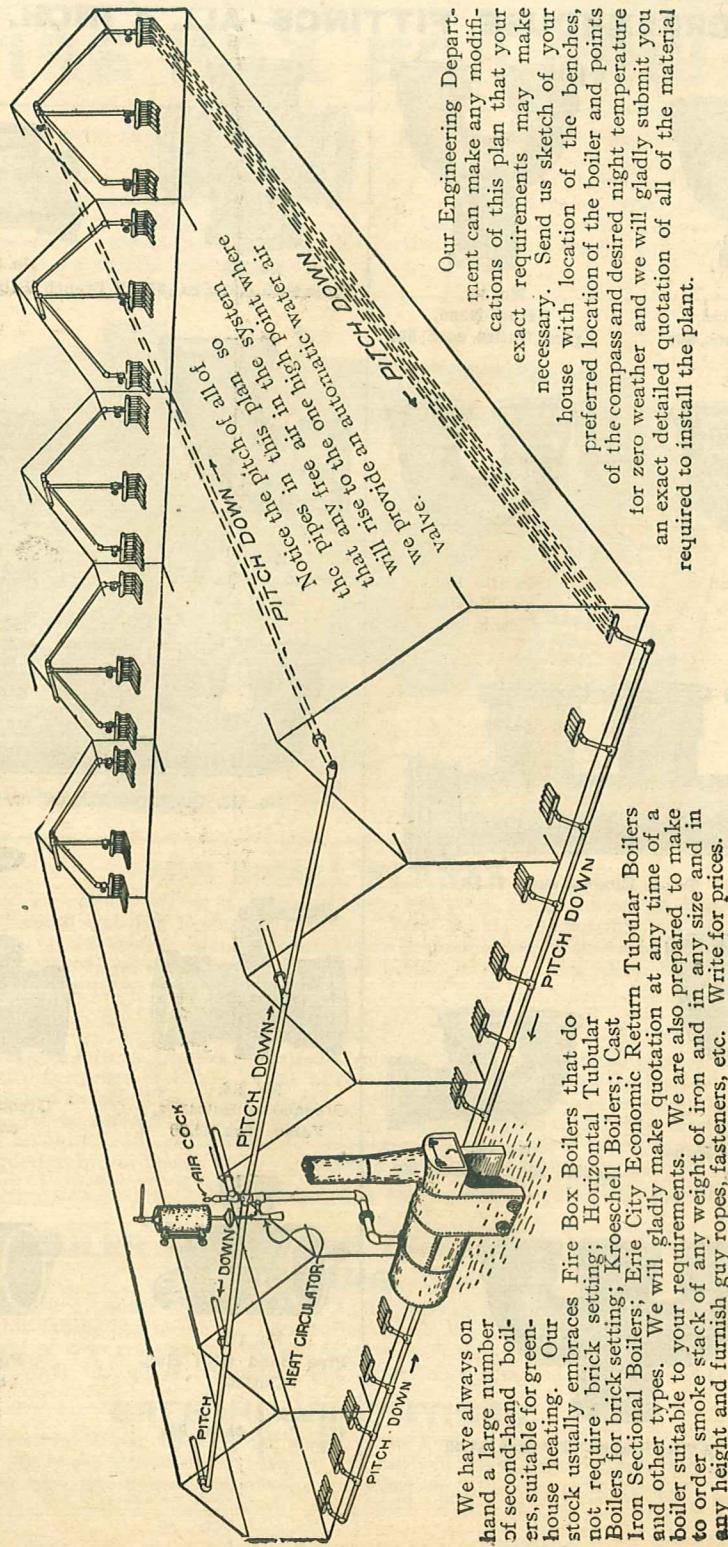
No. 115.
Pipe Band with Hub
Outlet.

4x4 inch } each, 65c
4x3 " }
4x2 " }



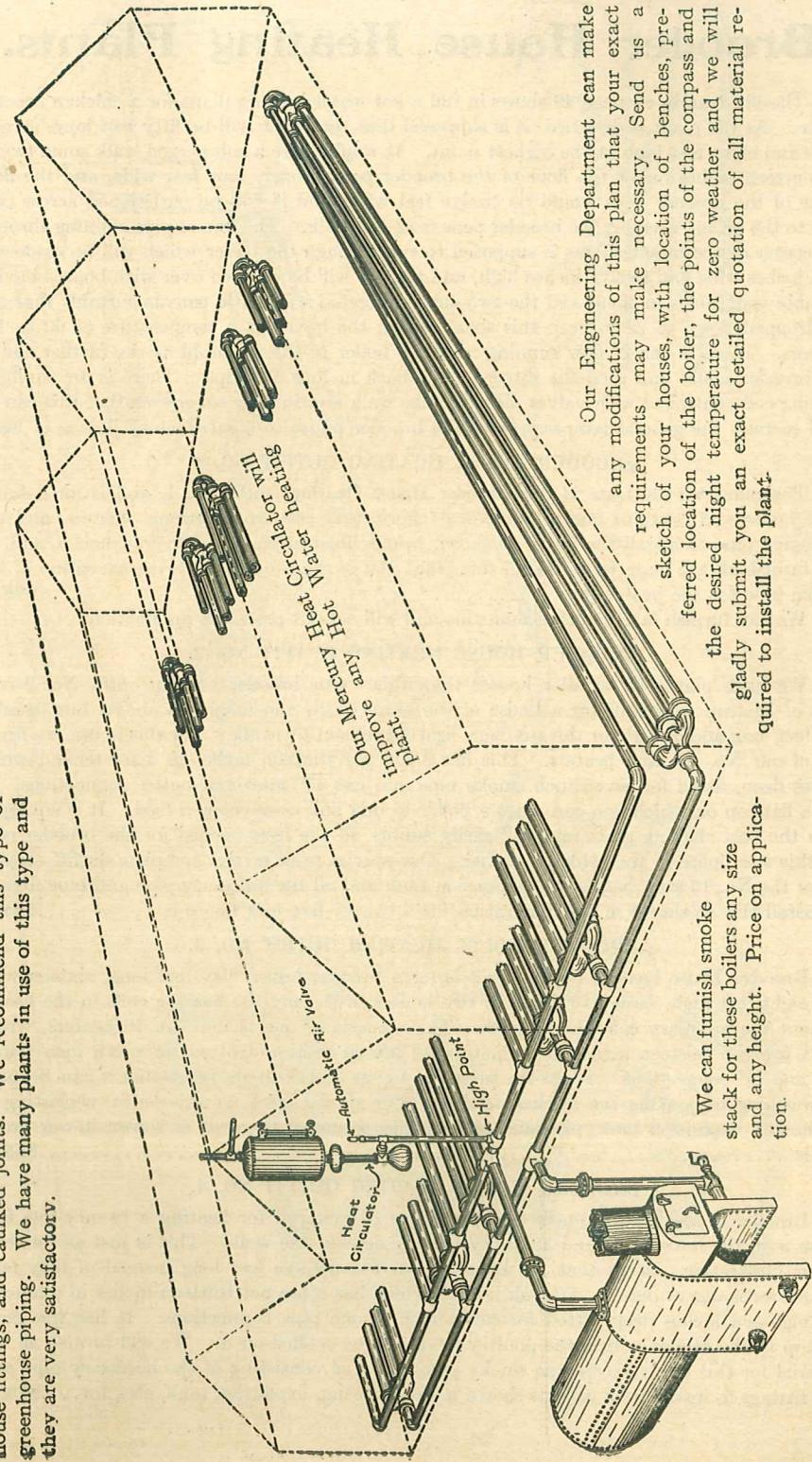
No. 116.
Pipe Bands,
each, 35c

This greenhouse heating plan has been very carefully worked out and will give perfect circulation. We figure on using $1\frac{1}{4}$ in. or $1\frac{1}{2}$ in. pipe for the main radiation with larger size pipe for the mains and for the over-head feeds. We would not advise using the small size pipe except with one of our Mercury Heat Circulators. These are fully described on page 33, and when one of these is used, the circulation even through the small radiating pipes will be very rapid and perfect. You will note from the sketch that we plan valves so that the lines under any of the benches may be cut off at any time it is desired to do so without affecting the general circulation of the system.



Our Engineering Department can make any modifications of this plan that your exact requirements may make necessary. Send us sketch of your house with location of the benches, preferred location of the boiler and points of the compass and desired night temperature for zero weather and we will gladly submit you an exact detailed quotation of all of the material required to install the plant.

This plan shows the use of 4-inch boiler flues with cast greenhouse fittings, and caulked joints. We recommend this type of greenhouse piping. We have many plants in use of this type and they are very satisfactory.



Brooder House Heating Plants.

The illustration on page 49 shows in full a hot water heating plant for a chicken brooder house. As the plant is designed, it is supposed that the house will be fifty feet long, sixteen wide and eight feet high at the highest point. It would have a submerged walk some twelve or fourteen inches below the floor of the brooder pens proper, four feet wide, and the floor space of the brooder pens would be twelve feet wide, and it will be partitioned across part way to the ceiling dividing the brooder pens from the walk. The line of pipe running through the center of the brooder pens is supposed to run through the hover which will be made sixteen inches wide and twelve inches high, and the top will be covered over with boards having suitable vent slides in them and the two sides protected with little canvas curtains that can be dropped down so as to keep this space within the hover at a temperature of 90 to 100 degrees. There is one 2" flow running from the boiler to the manifold at the further end of the brooder house and then the returns come back in four 1 $\frac{1}{4}$ " pipe. There is an auxiliary heating coil controlled with valves placed in the walk and in very severe weather this can be used to raise the general temperature of the brooder house to a satisfactory degree of heat.

BROODER HOUSE HEATING OUTFIT NO. 1.

The plant we illustrate is Our Brooder House Heating Outfit No. 1, and is for a fairly large house and contains one of our No. 64 Perfection cast iron sectional heaters, and the necessary pipe to install the outfit as shown in our illustration in a fifty-foot house, and we will furnish all the material to install this plant just as we show it, with the exception of the smoke pipe for the heater for.....\$95.00

We can furnish larger outfits than this and will submit prices on application.

BROODER HOUSE HEATING OUTFIT NO. 2.

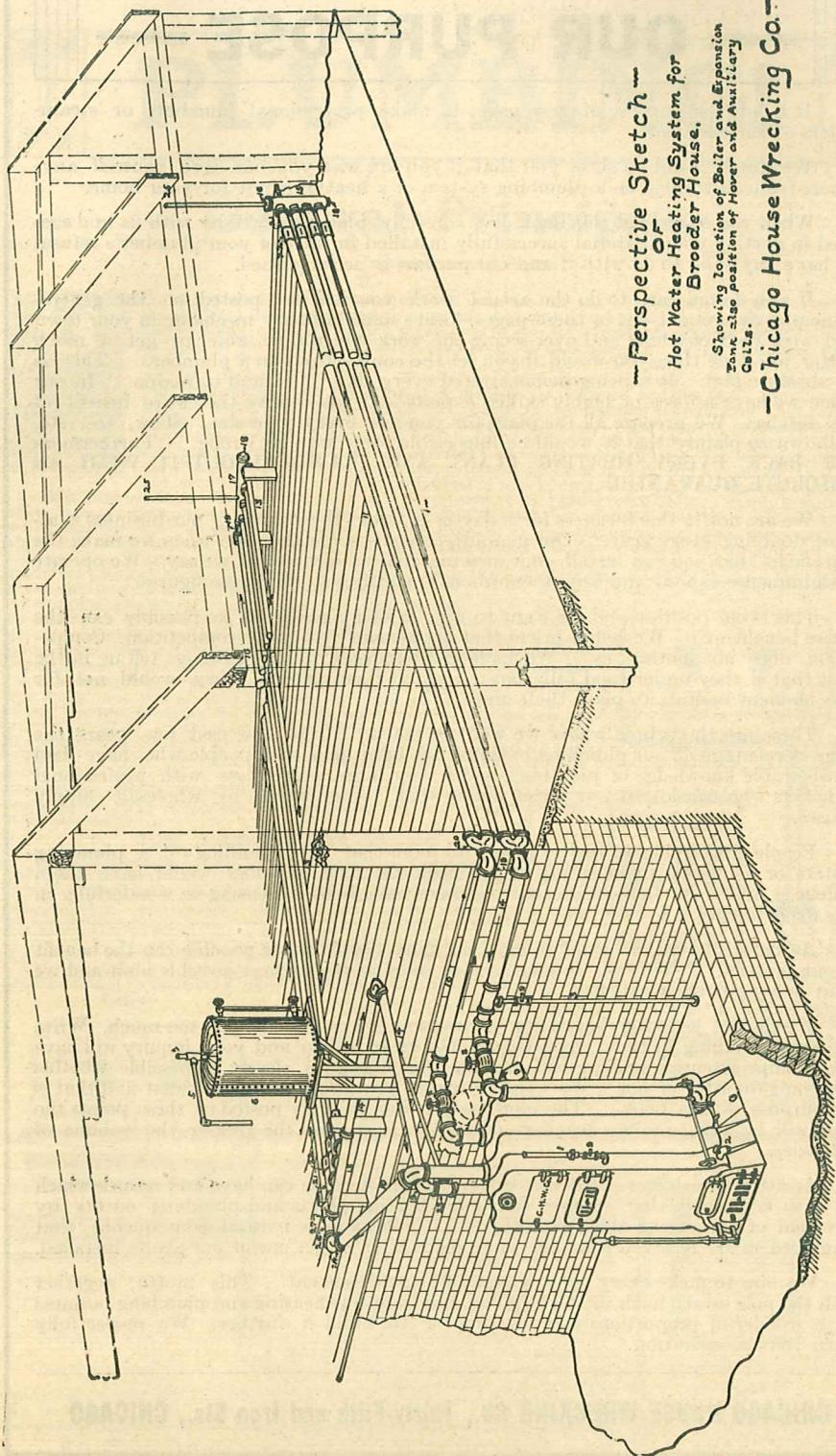
We have plants for smaller houses than this. Our brooder heating outfit No. 2 consists of heating apparatus for a house of the same width and height as above, but twenty-five feet long and is without the auxiliary heating coils in the walk. For this house, we figure one of our No. 15 tank heaters. This has a fire pot thirteen inches in diameter and twelve inches deep, fitted for seven inch smoke pipe and has 1 $\frac{1}{2}$ " inlet and outlet connections. It has a flat top on which you can place a boiler to mix and cook chicken feed. It is equipped with the best shaking grate and will easily supply all the heat needed for the brooder coils for this size house in the coldest weather. Our special price of this complete outfit, consisting of the No. 15 tank heater and expansion tank and all the necessary pipe and pipe fittings to install this as shown in the illustration for a twenty-five foot house is.....\$45.00

BROODER HOUSE HEATING OUTFIT NO. 3.

Brooder house heating outfit No. 3 is for a brooder house fifty feet long, sixteen wide and eight feet high, same as the above two houses, with only the heating coils in the hover, without the auxiliary coils in the walk. This consists of one of our No. 16 heaters, which has a fire pot thirteen inches in diameter and fifteen deep and fitted for seven inch smoke pipe and 1 $\frac{1}{2}$ " connections. It has the same flat top as described above, so that it can be used for warming or cooking the chicken feed, and our special price for this outfit, consisting of the heater, expansion tank, pipe and pipe fittings to install the coils as shown in our drawings is.....\$55.00

BROODER HOUSE HEATING OUTFIT NO. 4.

Brooder house heating outfit No. 4 consists of material for heating a twenty-five foot house with the hover coils and auxiliary heating coils in the walk. This is just as we show in our illustration, except that the house is but twenty-five feet long instead of fifty feet. The heater is one of our No. 17 tank heaters which has a fire pot thirteen inches in diameter and eighteen inches deep, fitted for seven inch smoke pipe connections. It has the same flat top as the others so that the poultry food may be cooked on it. We will furnish all the material for this outfit except the smoke pipe, material consisting of the necessary pipe and pipe fittings to install both coils as shown in our drawing, expansion tank, etc., for.....\$70.00



— OUR PURPOSE —

It is not the purpose of these pages to make professional plumbers or steam-fitters of our customers.

We simply want to show you that if you are wise you can save yourself anywhere from 30 to 60% on a plumbing system or a heating plant for your home.

When you have read this book over carefully, placed your order with us and succeed in getting your material successfully installed in spite of your plumber's refusal to have anything to do with it and our purpose is accomplished.

If you do not care to do the actual work yourself get posted on the general principles as brought out in these pages, locate some ordinary mechanic in your town and with your coaching and over-seeing the work you will be able to get a much better job done than you would if you let the contract out to a plumber. This is an absolute fact. It is being demonstrated every day. It stand to reason. In our office we have a force of highly skilled experts and you receive the entire benefit of this service. We prepare all the plans for you and every pipe size, elbow, tee, etc. is shown so plainly that it would be impossible for you to go wrong. Furthermore WE BACK EVERY HEATING PLANT AND PLUMBING OUTFIT WITH AN ABSOLUTE GUARANTEE.

We are not in this business for a day or a week; the volume of our business is almost doubling every year. Our guarantee means something and when we make the statement that you can install your own material we mean what we say, We operate with immense capital and buy in enormous quantities at very close figures.

This is our position and we want to give as many people as we possibly can the entire benefit of it. We sell at prices that are absolutely beyond competition. Competition does not bother us. We have had hundreds of our customers tell us in the past that if they understood fully how to install their material they would not for one moment hesitate to place their order.

These are the people whom we want to reach. Up to the past few years the large percentage of our plumbing business has been done with people who have had considerable knowledge of plumbing, and a very large percentage with professional plumbers who considered our prices better than those offered by wholesale supply houses.

People are coming to realize more and more that the installing of a plumbing system or a heating plant is not so difficult as their plumber would have them believe. And is for this reason that our sales have been increasing so wonderfully in this department.

As before stated, we want to give as many people as we possible can the benefit of our position. We want to increase our sales to the highest possible limit and we want every customer satisfied.

We do not jealously hoard our information; we cannot tell you too much. Write us about anything in these pages that is not clear to you and your inquiry will have our prompt attention and we will explain everything as clearly as possible whether you want to order or not. We want to spread this information broadcast and that is the purpose of this book. The more people who are fully posted on these points the more will be able to take advantage of our low prices and the greater the volume of our sales.

A satisfied customer is the best advertisement a house can have and records which we have kept show that we have sold more heating plants and plumbing outfits by this kind of advertising than any other. It follows as a natural consequence that many orders are received from the same place after we get one of our plants installed.

We aim to make every plant a standing advertisement. This motto, together with the policies set forth in the forgoing, has built our heating and plumbing business to its wonderful proportions and we propose to build it further. We respectfully enlist your co-operation.

CHICAGO HOUSE WRECKING CO., Thirty-Fifth and Iron Sts., CHICAGO

PLUMBING!

General Principles.



THE object of plumbing is to provide a sanitary means of disposal for waste water and sewage from dwelling houses to some distant point where it can be properly decomposed or carried away, and to provide a substantial means for supplying running water to various fixtures in the building. Every plumbing job may therefore be divided into two sections; the Waste Piping System and the Supply Piping System. To simplify matters we will take these up separately. First: The Waste Piping System. It is a well established rule in mechanics that the simpler a machine is designed and the fewer working parts it has to accomplish a given result the nearer it approaches perfection. This same rule holds in plumbing and steam-fitting as it does in every other known practical art. The simpler the system, provided it accomplishes the desired result, the better it will work, the less it will cost and the less liable it is to get out of order. The sole purpose of the waste piping system is to carry away the waste water in a sanitary manner. As it vitally concerns the health of every individual in the household it is by far the most important.

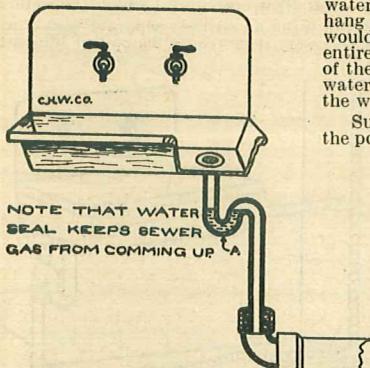
If it were merely a matter of disposing of the waste water the piping could be very simply arranged, but there is more than this to be considered. The system must be so planned that there will always be a water seal between the sewer or cesspool and the fixtures so that the poisonous sewer gases cannot find their way back through the piping and into the living rooms. This is accomplished by means of what is called a trap, a fixture in plumbing which probably 90 per cent. of the people outside of the plumbing trade are thoroughly familiar with. For the benefit of the remaining 10 per cent., however, who have not given this matter any thought we will explain.

Suppose you would connect a kitchen sink or any other fixture to a sewer or cesspool with a straight piece of pipe as shown in figure (1) there would be nothing here to prevent any sewer gases which would develop from rising right up through this pipe as they would through a chimney and fill the room. Suppose further however, that you would make a bend in this pipe as shown in figure 2. In this case as soon as any water was poured into the sink the crook in this pipe at A would become immediately filled with water and would remain so even after all of the water had been drained out of the sink, provided the water had not been poured in so fast that the suction action was sufficient to draw the water out of this goose neck or trap, as it is commonly called. Here then is the solution of the problem; by placing a trap or a water seal on this line between the plumbing fixture and the sewer these gases can be prevented from circulating up into the rooms.

THE IMPORTANT POINT.

There is one other point in this connection, however, which is so surprisingly simple that it is really wonderful to think of the complicated arrangements and indirect methods which plumbers use to provide for it. The point we refer to is ventilation, as the term is used in connection with plumbing. The purpose of this is to break the suction action in the trap which always takes place when a large quantity of water is passing through and to provide a ready means for the escape of any sewer gas which might develop at a pressure strong enough to force itself up through the water seal of the trap.

FIG. 2



and to allow any sewer gas to escape into the atmosphere above roof of the building.

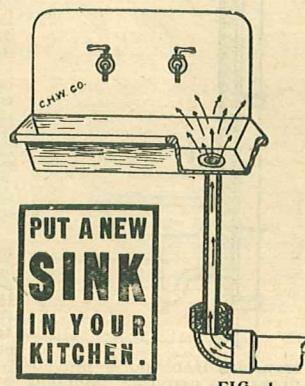


FIG. 1.

Have you ever tried the experiment of filling a rubber tube with water and placing one end in a vessel of water, letting the other end hang down as shown in figure 3? You would find that the water would run up through the tube over the side of the vessel, and the entire vessel could be drained in this manner. This is the principle of the siphon and it is this same principle which operates when the water seal of the trap is entirely drawn out by the suction of the water.

Suppose, however, that you punctured a small hole in the tube at the point A. Air would immediately enter the tube and the suction action would stop at once.

This is therefore the preventive; provide an entrance for air in the trap and it cannot siphon out. We accomplish this by carrying a main soil pipe stack from the ground line to the roof of the building and connecting the fixtures directly into it. The purpose of the soil pipe stack is to provide air to the various traps so that the seals can never be drawn out by the suction action of the water.

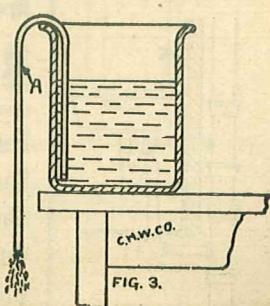
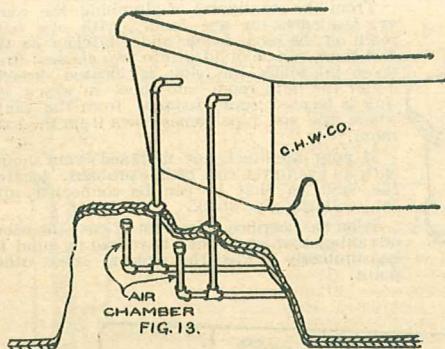


FIG. 3.

We Have Bargains in Slightly Defective Sinks.



In fact, there is only one point in connection with this part of the system that requires any explanation whatever, and that is the purpose and proper use of air chambers.

Remember when you place your order with us you always have the privilege to correspond with us about any point you do not understand. We stay with you to the finish.

The general principles explained in the foregoing are of course simply to show you "the reason why", and if, for any reason, you have to deviate slightly from our plans you can use your own judgment and do so intelligently.

These general principles cover practically all there is to the Waste Piping System of any ordinary plumbing job.

The rest is simply a matter of workmanship and detail, such as using proper size pipe, etc.

It now remains for us to discuss the second section of the system, i. e., the Supply Piping System.

This is so absolutely simple that there are very few principles to be explained.

It is simply a matter of running the proper size pipe from the source of water supply to the various fixtures to be supplied, in the most simple manner possible.

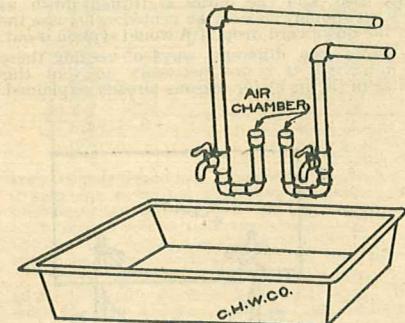
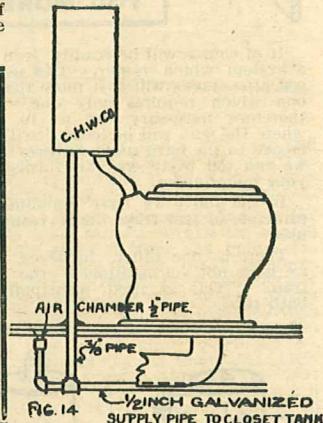


FIG. 15.

An air chamber is a section of the piping in which air is retained so as to provide a cushion when the water is suddenly turned off, as is most generally the case when the Fuller pattern of faucet is used.

When water is allowed to run very fast and is suddenly turned off there is produced a sudden thud in the piping which would very soon put the faucets out of order were there not some sort of cushion to stop the force.

This is the purpose of the air chamber.

By referring to figure 11 you will see where this is commonly placed on the sink connections.

Figure 12 shows how they are placed in the case of lavatories, and figures 13 and 14 show their proper location in the case of a bath tub and closet.

Circumstances of course have something to do with the arrangement, and if the supply pipes to the sink come down from above the arrangement shown in figure 15 would be followed.

Note that the air chamber must always point upwards

The Cheapest Way.

We are willing to give our customers the benefit of every possible saving. Get posted on the general principles as brought out on these pages. Design your own System. Send us an itemized bill of what you need. We will allow you \$5.00 on your bill for a complete plumbing system provided we do not have to make your plans.

THE USE OF VARIOUS TOOLS.



BEFORE proceeding further with this discussion it is proper here to explain the purpose and use of the various tools used in this work. First we will take up the Plumber's Blast Furnace. You will need to have one of these to melt the lead for caulking soil pipe joints, and also if you have any soldering to do you can heat the soldering iron with it. (Figure 16) shows an illustration of one of these furnaces. If the simple instructions given herewith are carefully followed there is no danger whatever connected with its use. The fuel used is gasoline. Figure 17 shows a diagram view with all the principal parts lettered. To start the furnace, first you remove the filling plug A; open the air cock B wide open; remove the bulb, pour in gasoline at the filling opening until the tank is about three-quarters full; replace the filling plug and screw it up tightly. Be sure that the leather gasket has not dropped off the plug before replacing it. It is necessary for safety that this plug be tightened so that it is absolutely air-tight. Take a dry cloth and wipe the entire tank very carefully so as to dry up any gasoline that may have been spilled over the sides in filling. Take the rubber bulb C; which is always furnished with these furnaces and slip the end of the tube over the air cock—be sure that the main valve D of the furnace is closed tight. The purpose of the bulb is of course to pump air into the tank and produce pressure on the gasoline. Pump air into the tank until the pressure is fairly strong. Several trials with the furnace will soon give you the experience necessary to tell when you have supplied enough air. When you think you have pumped in enough air close the air cock. You may leave the bulb attached to the furnace, as you will need to supply more air from time to time when the furnace is in use, as the pressure goes down about every three-quarters of an hour when the furnace is going at full force, owing to the fact that the gasoline in the tank is being constantly used and making more room for the air.

Always keep the air cock closed except when pumping.

The furnace is now ready to be lighted.

Before proceeding further, however, unscrew the burner stem E and examine it carefully.

You will note that this is simply a small tube with a hole about the size of a pin-head drilled in the side about an inch from the end.

There is generally a bend in the end of this stem which is for no other purpose than to facilitate in unscrewing it from the coil.

Look through the tubular end of this stem and see if you can see light coming through the side opening.

The chances are about ten to one that this small side opening will be clogged up. Take a pin or a small wire and carefully clean it out.

Then blow through the end of this tube to be sure that there are no obstructions. If you can feel the air coming through this small side opening the burner is all right and can be replaced in the coil.

We have had many of these furnaces returned to us by inexperienced persons simply because this small opening had become clogged.

It is a simple matter to clean it out and this should be done frequently.

There is only one other point in connection with this furnace which we wish to caution you very strong about, and that is the replacing of this burner stem in the coil.

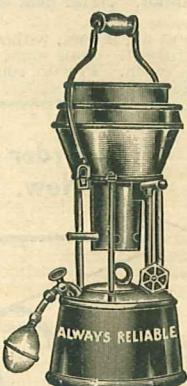


Fig. 16.

Remember that in working the gasoline travels from the tank up through the main supply pipe, dropping down through the coil and finally coming out through the small opening in the burner stem. As a matter of fact the gasoline does not reach the burner stem; it is transformed into gas in the coil before it gets to the stem. In order that the furnace generate properly, therefore, it is necessary that the coil be always kept heated to a high temperature, and to do this it is necessary that the stem be so adjusted that the small hole in the side points upwards toward the side of the coil. The jet of burning gas will then be projected against the coil and keep it heated.

Be sure that the stem is adjusted in this manner and also that it is reasonably tight in the coil.

Open the main valve D and control it so that the gasoline will flow out of the hole in the stem in a slow, steady stream and let it run until the bottom of the cup or coil cage F is covered about one-eighth of an inch deep. Close the main valve tight; light the gasoline in the cup or coil cage and let it burn until it is all practically burned out.

Do not be uneasy if it starts to burst up in a large flame. It will soon go down again.

When the gasoline in the cup is almost burned out open the main valve gradually and the furnace will start to blast at once.

If the strength of the blast gets weak after a time pump more air, and if the furnace starts to puff it is a sign that more gasoline is needed.

It is not necessary to put the furnace out to supply more air; you can pump in air while the blast is going.

Never let the pressure get down too low.

In melting lead for caulking be sure to heat the lead as hot as you possibly can. It will flow better and make a better joint.

In heating a soldering iron never heat it red-hot. When it is heated so that the carbon or soot has burned off this is hot enough.

IF YOU DO IT YOURSELF IT WILL BE DONE RIGHT.

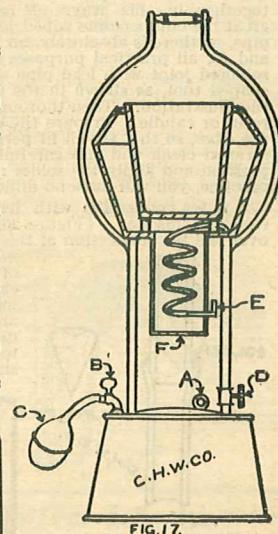


FIG. 17.

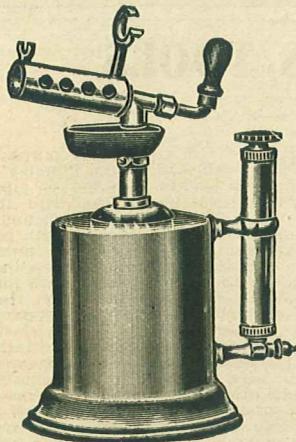


Fig. 18.

To solder a joint file the entire surface of the iron with a coarse file. Always use a plumber's furnace or a gasoline torch to heat the iron if possible. Of course if you have neither of these handy you can heat it in an ordinary stove, but it is very hard to do this without heating the iron red-hot. Never heat the iron red-hot; heat it only until the carbon or soot has burned off.

It is almost impossible to do a good job of soldering, or to have any success at all, in fact, without using any acid solution. Get about 10 cents worth of Muriatic Acid from your druggist. Pour some of it into a small copper or brass receptacle of some kind. Do not use anything made of tin. Procure some zinc filings or a small piece of zinc and let it dissolve in the acid and it is ready for use.

In using the iron, dip the point of it into the acid frequently and keep it always coated with the solder by filing it carefully after it becomes hot and then dipping it in the acid, it will take the coating of solder very rapidly. If you heat the iron to a red heat, you will burn this coating of solder off.

You absolutely cannot solder properly, unless the point of the iron is coated. This is the secret of the entire matter, and when this is fully understood, with a little practice, any inexperienced person can solder a joint very easily. It is just as simple an operation as it is to cut and thread a piece of pipe.

Brass takes the solder most readily. Cast iron can be soldered, but it does not make a strong joint. Wrought iron also takes solder easily, by using the acid freely and filing the surface clean.

In soldering lead pipe, scrape the surface absolutely clean. Rub it thoroughly with a piece of rosin or candle before the air has a chance to get to it. See that the point of the iron is properly coated and it will be very easy to get the solder to stick. A bursted lead pipe can be very easily repaired in this way. Lead waste pipe can also be very easily soldered together in this way. It is not necessary to have a great big cumbersome wiped joint on the lead waste pipe, as there is absolutely no pressure on the water and for all practical purposes a neat solder joint is just as good in every way. (Figure 19) shows how a soldered joint with lead pipe should be made. First, take a turn pin, which is simply a small wood top shaped tool, as shown in the illustration, and slightly enlarge the end of one piece of pipe, as shown in the illustration. Then thoroughly scrape the inside of this piece of pipe and rub it quickly with a piece of rosin or candle. Prepare the end of the other lead pipe by simply scraping the outside and also around the edge, so that it will fit perfectly in the cupped end of the other pipe. Be sure to have these surfaces scraped clean and rub carefully with the rosin or candle. Place them together carefully in the proper position and apply the solder all around. You can also use the acid in making this joint. With a little practice, you will have no difficulty whatever in connecting up any sized pipe in this way.

A tee connection with lead pipe can also be made very easily in this way. (Figure 20) shows how to prepare both pipes over the tee connection of this kind. The main thing to be remembered in making a connection of this kind, is to always have the end of the pipes, which is to be joined together, carefully scraped and apply the candle grease or rosin quickly before the air has a chance to oxidize the surface. (Figure 20-a) shows the joint made up.

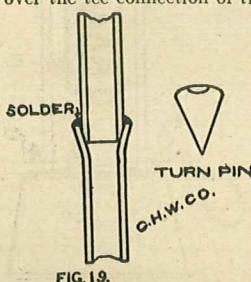


FIG. 19.

We can have all fixtures
furnished with connections
for Iron Pipe at a slight ad-
ditional expense if you desire.

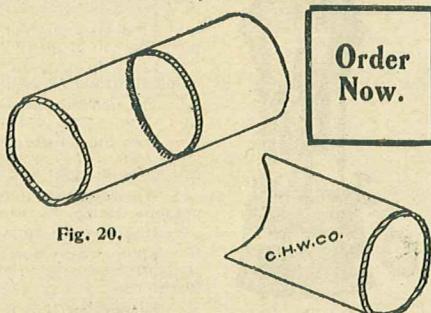


Fig. 20.

SIMPLE AS A. B. C.

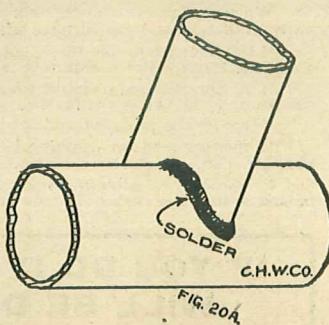


FIG. 20A.

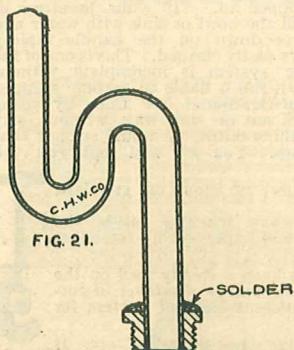


FIG. 21.

By following the instructions on page 6 carefully, a lead joint of this kind can be very easily made, and as a matter of fact, think that with a little practice, any inexperienced person can make up a lead waste piping system with just as much ease as an iron pipe waste piping system. Lead pipe has the advantage, owing to the fact that it can be bent around corners and it is much more pliable. Of course, these solder joints require a little skill to make them properly and if you have not had much experience in handling tools, it would be more advisable to use iron waste pipe.

TO SOLDER ON A BRASS SOLDER BUSHING. As plumbing fixtures are usually furnished, they are made to be connected with lead pipe and there is no provision made for iron pipe placed on the outlets. To offset this, it is necessary for us to furnish brass solder bushings. We can either furnish you these separately on your order, or we can solder them on for you. We make a slight additional charge for soldering on these brass solder bushings on the fixtures. (75c for each 1/2" nipple and 50c for each 1 1/2" nipple.) However, you can do it yourself for much less than this, as it takes only a short time. By referring to (Figure 21) you will see how these bushings are soldered to the waste outlets on the lavatory. Simply slip the brass tubing down into the bushing to the bottom and apply some of the acid around the top of the bushing and apply the solder. A stronger job can be made if you will hold

the entire bushing over a blast furnace and make a sweated joint, that is, so that the solder can run down between the brass tube and bushing all around. The lavatory takes a 1 1/2" solder bushing, and the bath tub takes a 1 1/2" solder bushing. In the case of a lead trap, practically the same scheme is followed. The only difference is, that the lead pipe will not quite fit down at the top. File the lead trap carefully around the end and get it down as far as you can in the bushing, then apply the solder around the top in a similar manner.

You cannot sweat a nipple on to the lead pipe, as you would be liable to melt the pipe. You

will have to do this job by soldering around, and it can be done very easily in this manner. Put plenty of solder around the top so as to insure a good strong joint. When screwing an iron tee up to a lead trap of this kind, be sure and keep a wrench applied at the bushing, so as to be sure and



Fig. 22.

not twist it off. The only occasion you will have to use the iron pipe connections, is on the trap from the sink, laundry tubs or other similar fixtures and the bath tub and lavatory. The closet is connected in a much simpler manner, as will be explained later on.

CALKING TOOLS. These are used to calk the lead in around the soil pipe joints. Four tools usually complete the set. One, called the yarning tool, has a long slender stem and is used to pack in the oakum, as shown in (Figure 22.) There is another, which is used to get around corners and is made with an offset both right and left hand (Figure 23).

The other tool is made with a short stubbed end and is most used. This is used for calking in the lead where it is easy to get at.

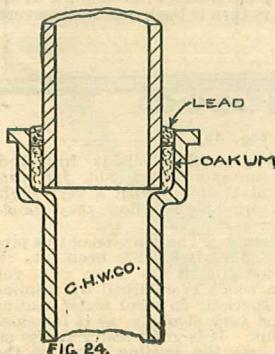
TO CALK A JOINT. Cast iron soil pipe is always made up with calked joints, and a joint of this kind is the most simple that could possibly be devised.

Lead and oakum is the proper thing to use to calk these joints. Oakum is a hemp like material calked in before the lead. If you will examine a length of soil pipe, you will notice that it has an enlarged hub at one end and a slight raised shoulder on the other. This spigot end on one length of pipe fits inside the hub of another length and leaves sufficient space around it to calk in the lead and oakum. By referring to (Figure 24), you will see very clearly how a joint is made. First calk in the oakum as tight as you can get it, to within 1/4" from the top of the hub. Do not calk in this oakum in short pieces, work it together in a long continuous length and wind it around the pipe, at the same time calking it in tightly with the yarning chisel. Be sure that the lead in the melting pot is as hot as you can get it and have the furnace as close as you can possibly get it to where you are working. Take a ladleful of the lead and pour it in around the joint carefully.

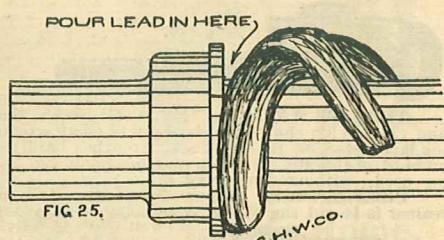
After it has cooled about three or four minutes, take the stub calking chisel and a fairly heavy hammer and calk the lead in, until you think the joint is sufficiently tight. Do not calk the lead in too hard, or you might crack the hub.

The above instructions cover all there is to calking a plain upright joint, but in many cases the joint has to be made in a horizontal position. This difficulty is overcome by taking a wet cloth and twisting it in a rope form and wrapping it around the pipe, as shown in (Figure 25.) Press it tightly against the hub and leave a slight space at the top and pour in the lead, as shown.

After sufficient lead has been poured in, leave it cool until it becomes set. Remove the cloth and chisel off the surplus lead, then calk it in the usual manner.



ANYTHING
YOU
DON'T
UNDER-
STAND.
WRITE US.



Write To-Day For Estimates.



PLUMBERS' FORCE CUP. This is a very handy tool (illustration shown in Figure 26). This is used in forcing out a trap, etc., which has become stopped up. If your lavatory or sink, etc., gets stopped up, this is a sure remedy. Simply fill the bowl or sink with water and place the mouth of the force cup over the opening and force down on the handle rapidly several times. You will find that the obstruction will be very easily cleaned. This is one of the most useful tools in connection with plumbing and a plumbing system is incomplete without having one of these on hand at all times. A lavatory or bath tub is liable to become stopped up at any time and there is no better or quicker method of clearing it out than by using one of these force cups. The closet bowl can also be forced out in this way without any trouble whatever. If you are placing an order for a plumbing outfit, we would suggest that you add one of these force cups and keep it handy at all times. You will find that you will have occasion to use it.

PIPE CUTTER hardly requires any explanation. (Figure 28) shows our standard form of Three Wheel Pipe Cutter which we furnish.

Always use plenty of oil in cutting pieces of pipe. A heavy machine oil is the best. This will make the cutter work easier and you will be less liable to chip the edges of the wheel on the cutter.

In working the wheel, keep turning the handle so as to keep a steady feed on the Fig. 26. cutter. If these instructions are followed, you will have no trouble whatever in cutting any piece of pipe in a very short time. There are of course different sizes of cutters for different sizes of pipe.

PIPE VISE. This tool is of course used to hold the pipe while threading, etc. It Fig. 28 hardly requires any explanation (see Figure 27). There are one or two good methods of setting this vise up and it only takes a short time to become fully familiar with its working, so that the pipe can be handled quickly. You will note that the upper jaw works on a hinge so that it is not necessary when you wish to remove a piece of pipe to draw it out lengthwise, simply remove a small pin, as shown in Figure 27. Also in setting up this vise for threading the pipe on a heating job or plumbing job, it is good policy to have a brace of some kind about 4 or 5 feet back from it to support the other end of the pipe.

STOCKS AND DIES. (Figure 29) shows our "Q" and "E" Stocks and Fig. 29. Dies. We usually furnish these in two complete sets. Set No. 1 taking from $\frac{1}{4}$ inch pipe up to one inch, Set No. 2 takes in from $\frac{1}{4}$ inch to 2 inch. To cut the larger sizes, we have our set No. 3, which threads $2\frac{1}{2}$ and 3 inch pipe.

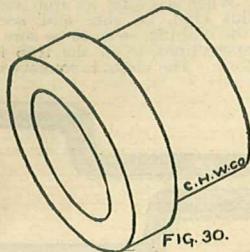


FIG. 30.

You will of course note, on examining these stocks and dies when you get them, that there is a separate die for each size of pipe; also, a separate guide. Figure 30 shows what we mean by the guide. This is simply a small cast iron sleeve which fits in the end of the stock so that the stock will fit snugly around the size pipe that is being threaded. Each size of pipe requires a different size guide.

In threading a piece of pipe, always be sure to supply plenty of oil at the point where the die is cutting. Do not twist the die in continuous turns, give it about a quarter turn; then turn it back and forth three or four times; then turn it another quarter in advance. Continue this form of cutting until the thread has been cut far enough; working the stock back and forth, according as you are cutting; otherwise you will break the teeth on the die. One man can easily cut and thread all sizes of pipe up to $1\frac{1}{4}$ inch. Also, with slightly more exertion, one man can cut and thread $1\frac{1}{2}$ inch pipe. For all larger sizes, however, it will require two men to turn the stock.

Our No. 2 stocks and dies, also our No. 3, are equipped with a lead screw; or feeding arrangement. Firmly fasten to the pipe so that the die must follow this thread, while it is cutting. By carefully examining the mechanism of the tool, this will very soon be understood.

There are three strong set screws which are used to fasten this lead screw to the pipe. Have this lead screw unscrewed to within about three or four threads from the end. Then place the stock over the end of the pipe, setting it on to the point where the die just touches the end of the pipe; then fasten the set screws tightly and you can start to cut the thread.

The purpose of this lead screw is, of course, to keep the teeth of the die from slipping off the end of the pipe in starting the thread. With a little practice, any ordinary mechanic, with average intelligence, should have no trouble to fully understand how these dies and stocks should be properly used.

Another very important point to note is, that it is absolutely necessary to have the die placed right in the stock, that is, with the right side up. If you place the die in the stock in the reverse position, you will not be able to start the thread. By carefully examining an ordinary pipe die, it will be seen that on one side there is a sort of a slope to the threads as they near the end. This is the right side of the die and should be turned in so that when you start cutting it will catch the end of the pipe and gradually take hold and get the thread started. The edges on the other side of the die are absolutely flat and would be impossible to start the thread on this side of the die. Note this carefully in removing and replacing the die in the stock. If you happen to start cutting the thread and find that it is absolutely impossible to catch and start cutting, you will find in ninety-nine cases out of a hundred that the trouble lies in the fact that the die is not properly facing in the stock.

IN THREADING PIPE the principal point to remember is that plenty of oil should be applied at the point where the die is cutting; and further, that it be never forced. Always turn it back and forth several times, if it begins to cut hard.



FIG. 31.



FIG. 32.

THE PIPE WRENCH. (Figure 31) shows the standard form of pipe wrench which is furnished, and (Figure 32) shows another form of chain wrench which is very handy and more serviceable for turning larger sizes of pipe. These wrenches hardly require any further explanation. With a very slight amount of practice, any ordinary mechanic can understand their working principle and how they should be used, without any trouble.

PIPE REAMER. (Figure 33) shows our standard form of pipe reamer. The purpose of this pipe reamer is to cut the burred edge which always remains on the end of the pipe after it has been cut. If you will carefully examine a length of pipe after it has been cut, you will fully appreciate the great advantage which is obtained by reaming this burred edge out with the reamer, especially in a hot water heating system. We advise reaming of the pipe very strongly, as it increases the capacity and insures better circulation. It is good policy to use oil in reaming the pipe; it also, will help to save the cutting edge of the reamer.

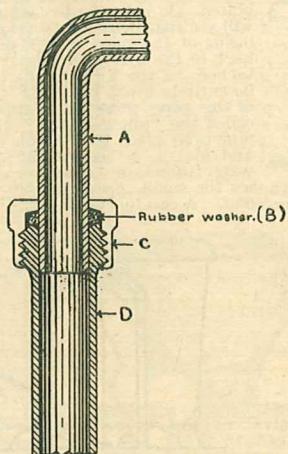


FIG. 33.

CONNECTING THE FIXTURES.



THE SLIP JOINT CONNECTION. This is a very simple method of connecting waste and supply pipes, etc., to plumbing fixtures and is very widely used in this plumbing work. (Figure 34) shows the arrangement of a joint of this kind. You will note that the end of one pipe fits down inside of the other and there is a rubber washer placed underneath a coupling or collar so that when the collar is firmly screwed down this compresses the rubber washer against the side of the inside pipe and makes an absolutely tight joint. The great advantage of a joint of this kind lies in the fact that it can be made in one or two minutes and it gives you a certain amount of leeway for proper adjustment. For instance, the pipe "A" could be shifted up or down inside of this pipe "D" within 1 or 2 inches and the joint could be made tight at any point. You will find many of these joints in connection with your fixtures and we give this explanation so that you will understand how this should be properly connected.



Cross section of slip joint showing construction.

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Fig. 34.

can furnish either of these bath cocks with iron pipe connections and it is a very simple matter to connect up the galvanized iron pipe to supply the water. If desired, we can also furnish you with nickel-plated supply pipes on these tubs to the floor. These nickel-plated supply pipes always have $\frac{1}{2}$ -inch iron pipe connections on the end so that you can connect the $\frac{1}{2}$ -inch iron pipe right on.

It is always advisable to use a lead "drum trap" in connection with the waste pipe from the bath tub. Figure 8 shows how this trap should be properly connected. You will note that it can be set right in the floor. This trap is constructed with a removable cover which can be very easily unscrewed and the entire trap cleaned out. The purpose of this trap is, of course, to keep a water seal between the fixture and the main sewer pipe so as to prevent any sewer gases from circulating up into the rooms. We can furnish these traps with iron pipe connections wiped right on at the proper point so that you can use $1\frac{1}{2}$ -inch galvanized iron pipe to make these waste connections without any trouble whatever. This will get away from all wiping of joints or difficult lead work, and any man who can cut and thread iron pipe and screw it together can do all of this plumbing work without any trouble by following our very clear plans.

The flush elbow which is used to connect a low-down closet tank with the closet bowl is made in this way and also the connections on the connected waste and over-flow to the bath tub. In order to make a tight joint it is always necessary to have rubber washers inserted in under the collar. These washers are always furnished with the fixtures.

THE BATH TUB. There are several standard forms of connections used in connecting up bath tubs and we will give herewith a short explanation of each of the various forms:

The most common form of connection used is the "connected waste and over-flow." (Figure 35) shows a standard form of bath tub connected in this manner. You will note the tee connections at point "A" are all made up with slip joint connections and it is a very simple matter to connect one of these waste and over-flows with your bath tub. These fittings are always shipped separate from the bath tub and it is necessary for you to fit them up yourself. Be sure to have rubber washers inserted under the waste over-flow plugs and see that rubber washers are applied to the slip joint connections and you will be assured of getting good tight joints. Note that in this illustration we show an iron pipe connection soldered on the end of the waste outlet. This is never furnished by us unless requested and we make a slight additional charge for soldering on this iron pipe thread, as before explained. We can sell you these iron pipe nipples separately if you desire, and you can solder them on yourself in a very short time.

As to the supply pipe connections, the most commonly used method of supplying water to the tub is to use either Fuller or compression bath cocks located at the rear end, as shown in this illustration. We

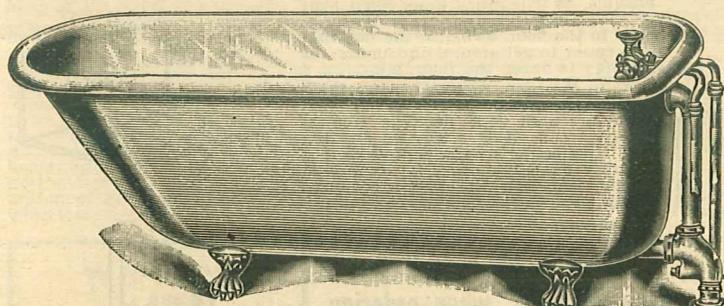
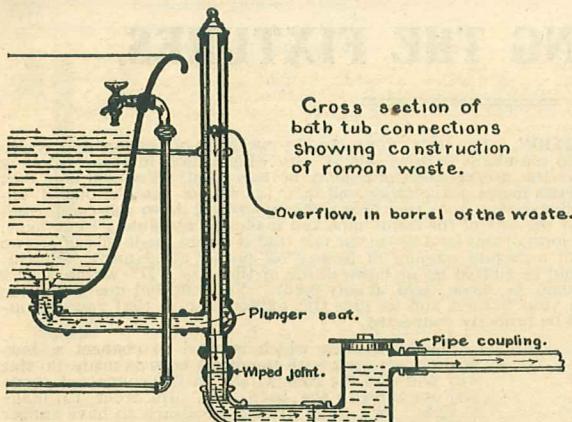


Fig. 35.

Put a
Modern
Bath
Room
Outfit in
Your
Home.



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Fig. 36.

Cross Section of Bath Tub Connections Showing Roman Waste.

point and climbs up inside of the main waste pipe until it reaches the small openings on the inside pipe, shown in the illustration. It is at this point that it over-flows. A careful study of this illustration will make this entire matter very clear.

Another standard form of connecting the supply pipes is called the "bell supply."

This simply consists in supplying the water to the tub below the water line. Connection is usually made about 3 or 4 inches above the bottom and over this there is placed a nickel-plated brass bell-shaped cover.

The purpose of this cover is to turn the course of the water as it enters the tub.

(Figure 37) shows this form of connection.

You will note the hot and cold water is controlled entirely outside of the tub. The two uprights "A" and "B" have valve wheels for turning on or off either the hot or the cold water.

The advantage of this arrangement is that you can get a much larger flow of water and there is a more perfect mixing of the hot and cold water before it enters the tub.

We can furnish any of these various styles of connections with any of the outfits which we sell. Prices vary, of course.

THE LAVATORY hardly requires any explanation. There are hundreds of different forms of lavatories and they are all connected in the same general way.

A careful examination of any lavatory and the parts which go with it should be sufficient for anyone to understand fully just how it should be properly set and connected.

We will say here that the lavatory supply pipes on our lavatories are always furnished in $\frac{3}{8}$ -inch nickel-plated pipe which has iron pipe threads on the ends. In providing for connection to a lavatory we recommend using $\frac{1}{2}$ -inch galvanized iron pipe to the actual point where the connection is made, and by using a reducing coupling or a reducing elbow at this point you can make connection with the $\frac{3}{8}$ -inch pipe.

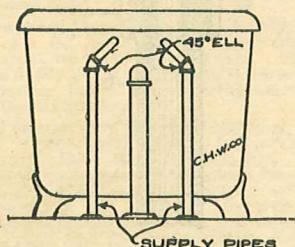
As to the waste outlet, you can either use a "P" trap, as shown in (Figure 38,) or an "S" trap to the floor as shown in (Figure 38a.)

This depends entirely on whether you want to make the connections to the wall or to the floor. We recommend wall connections where possible, as it is much more convenient to have these pipes going to the wall than to the floor, owing to the fact that it is easier to get around and under the lavatory to sweep the floor, etc.

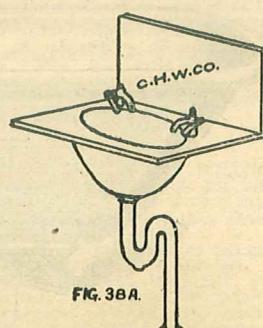
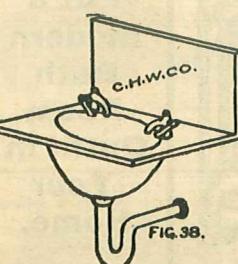
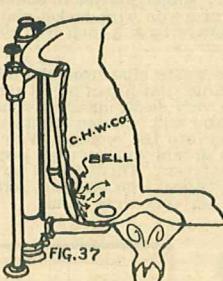
As to the connections with this lavatory, as the greater part of all our lavatories are used with iron pipe connections we can either solder on an iron pipe connection to the outlet of the lavatory when you order it, or we can furnish you with the necessary brass nipple and you can solder it on yourself.

(Figure 36) shows another method of making connections to a bath tub. This is called the "Roman waste." The only difference between this and the standard connected waste and over-flow fitting lies in the fact that the water over-flows inside of the nickel-plated pipe in the back and there is no over-flow outlet whatever on the tub itself. The advantage of this sort of connection is that it does away entirely with the chain and rubber stopper.

Aside from this it has no particular advantage except that it is a little more stylish. It is, of course, a more expensive connection. We furnish this kind of connection with our No. 3 Bath Room Outfit and we furnish the standard connected and waste over-flow fitting with our No. 3½ Outfit. These fitting are, of course, all heavily nickel-plated. On referring to (Figure 36), you will see that there are two separate pipes inside of the main waste pipe on the back of the tub. The inside pipe is attached to the knob at the top and can be entirely lifted out. At the bottom of this pipe there is a rubber gasket called the "plunger seat." When this pipe is in place it rests on this gasket and makes a water-tight joint. The water therefore cannot escape at this point and climbs up inside of the main waste pipe until it reaches the small openings on the inside pipe, shown in the illustration. It is at this point that it over-flows. A careful study of this illustration will make this entire matter very clear.



The above sketch shows a rear view of one of our bathtubs showing standard connections. Note how 45 degree elbows are used with supply pipes.



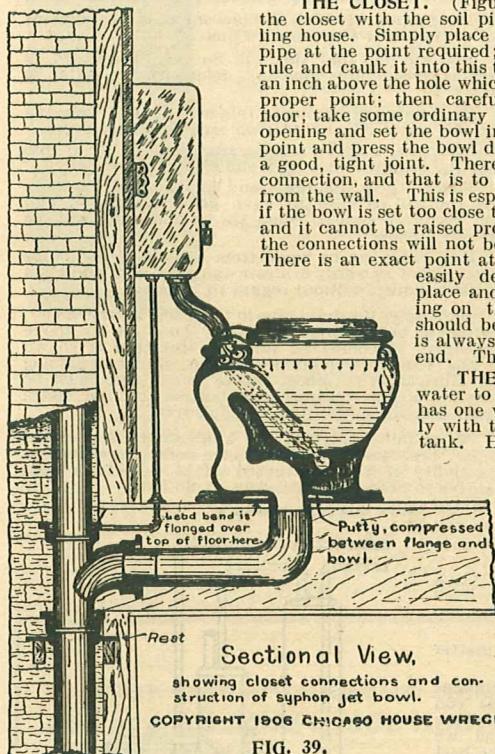
Specify if you want iron pipe connections when ordering.

FIG. 38A.

THE SINK. The waste connections as usually made to the sink consist simply in placing the collar, which is always furnished with a sink, over the upper end of the trap and then flanging the end of the trap out to fit the bottom of the waste outlet of the sink. Then take some ordinary putty and mold it around this outlet on the sink, set the trap in place, draw the collar up tight and screw the sink bolts up as tight as you possibly can with a small wrench. This completes the connection.

As to the other connections with the faucets, etc., these require no explanation whatever. This simply consists in carrying $\frac{1}{2}$ -inch supply pipe to the hot and cold water faucets on the sink, connecting them up in the most practical manner possible. It is always advisable, however, to have a slight extension of the pipe to provide for an air chamber, as has been previously explained. If the pipes come down from the top this air chamber will have to be arranged as shown in (Figure 15); if the pipes come up from the bottom it will simply be a matter of extending the pipe a foot or so up beyond the pipe where the faucet is connected and putting a cap on the end of the pipe. We can furnish any of our standard lead traps with iron pipe connections if desired, or, we can furnish brass nipples, as before stated.

LAUNDRY TUBS. Connected in exactly the same manner as the kitchen sink.



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FIG. 39.

THE RANGE BOILER. (Figure 40) shows the standard method of connecting the range boiler with the ordinary cook-stove. (Figure 41) shows the arrangement when it is desired to make connection with a furnace. (Figure 42) shows how connection with the cook-stove, a gas heater, and also connection with a furnace is made. Any modification of these arrangements can be very easily made by simply cutting one or the other out. It is not necessary to have any valves in an arrangement of this kind, as the water can circulate freely without any harm whatever. For instance, if the gas heater is burning and the other fires are out the water will be heated in the range boiler in the usual manner; if the furnace is working and the other fires are out, this will heat the water. The general form of connections shown in these illustrations should be very carefully followed. You will note that the cold water is supplied to the top of the range boiler. Be sure to get this cold water pipe connected in the proper opening. We always furnish with our range boilers when specified "complete" a tube which comes down inside of the boiler, leading from the cold water inlet on the top. The purpose of this tube is to carry the cold water clear down to the bottom of the boiler so that it does not mix with the hot water when it is coming in.

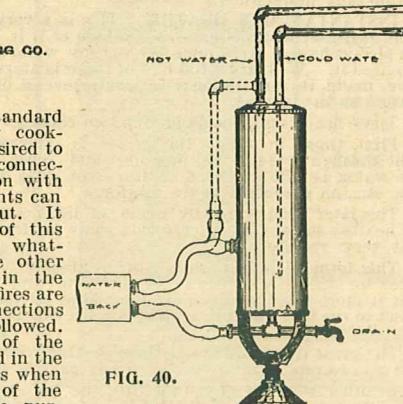


FIG. 40.

Showing range boiler connected with cook-stoves,

We Furnish Complete Blue Print Plans and Instructions for each Individual Case.

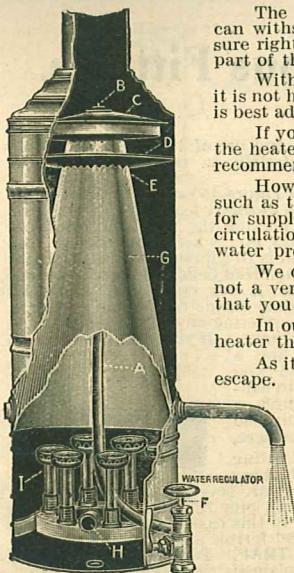


Fig. 43.

There is a complete instruction card sent with all of these heaters, so that there is no further instruction necessary as to the connections, etc.

We have another form of heater, called the Circulation Heater, which is a lower priced heater than either of the above, being constructed of cast iron. The heating surfaces are made up in small cast iron sections placed one above the other with a gas or gasoline burner underneath.

In connecting up any of these heaters for circulation, that is where you turn the full city pressure right into the heater, it is best that you have some sort of a tank in connection with the heater, otherwise when you turn a faucet off, the water in the heater would start to boil at once and generate steam, so that you would not get good results. When a storage tank is connected with the heater, the water keeps up a constant circulation between the tank and the heater so that it takes a much longer time for any steam to develop. The matter of connecting these heaters with the range boiler is fully shown in our catalogue.

We can furnish these heaters for either gas or gasoline. As before stated, the expense for running them is really very small. No plumbing system is complete without one of these heaters in connection with it.

Our instantaneous heaters are all solid brass heavily nickel plated.

An ornament to any bath room.

Hot water starts to flow the moment you turn on the gas.

These heaters are placed directly over the bath tub no expensive piping system necessary.

The most efficient heaters on the market.

The other kind of heater, as before stated, is built very strong so that it can withstand the full pressure of the water and you can carry the full pressure right into them and you can pipe the hot water from the heater to any part of the house.

With the above description of each of these classes of heaters fully in mind, it is not hard to determine, considering your particular conditions, which heater is best adapted to your purpose.

If you just want the hot water for the bath tub and do not care to have the heater supply water to any other fixtures in the house, then we would recommend that you use the surface heater.

However, if you want to pipe the water to other fixtures in the building, such as the lavatory or kitchen sink, etc., and secure the benefit of this heater for supplying water to these fixtures, it will be necessary for you to have the circulation heater, which is made of a copper coil, strong enough to stand the water pressure.

We do not mean to infer by this, however, that the copper coil heater is not a very efficient heater in every way. The point we wish to bring out, is that you will get a slightly larger degree of efficiency with the surface heater.

In our copper coil heaters, the coil goes from the top to the bottom of the heater three or four times.

As it is one mass of coils, there is very little chance for any waste heat to escape. It takes a little longer for this heater to get warmed up than the other, but you can have a constant stream of very hot water flowing inside of four or five minutes.

These heaters are not as expensive to keep up as some people imagine.

The point to remember is that there is absolutely no expense for burning gas, except when the heater is in use.

It is much less expensive to use one of these heaters in the summer time than it would be to have to start your kitchen stove every time you wanted to heat water.

(Figure 43) shows our standard form of surface heater and (figure 44) shows our copper coil heater which is built to withstand the full water pressure.



Fig. 44.

An Explanation of the Various Fittings.

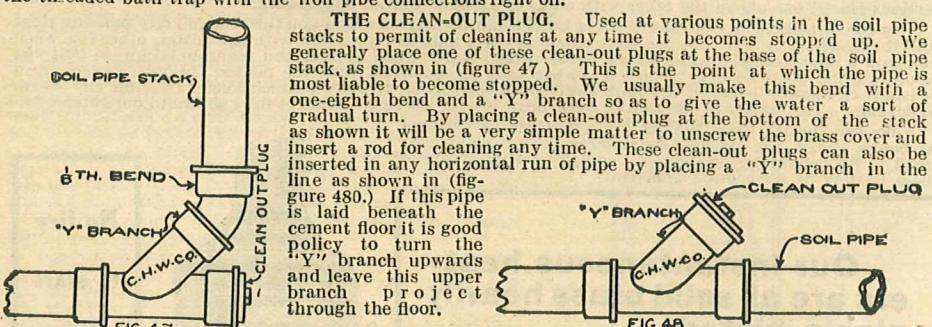
WE will give at this point a brief explanation of the purpose and use of the principal fittings used in this plumbing work, as this will help you very materially in connecting up your system.

THE COMBINATION LEAD BEND AND FERRULE. (Figure 45) shows an illustration of this standard form of fitting. This consists simply of an ordinary lead bend with an iron collar flanged on one end of it. This fitting is used in making the connection between the closet and the soil pipe; also in connecting slop sinks, etc., when mounted on trap standards. The purpose of the iron collar at the long end is to support the lead so that it can be caulked into the soil pipe fitting. These combination lead bends and ferrules come in lengths from 12 inches to 18 inches. The 12-inch size is for connecting high-tank closets. Closets and the longer lengths are for connecting the various forms of low-tank closets. It is important to specify the exact length desired when ordering any of these bends and ferrules, as you cannot increase or reduce their size to advantage. If you are not sure as to the exact size required we would suggest that you order a plain lead bend and a brass ferrule. You can then cut the lead bend to any length desired and you can insert the ferrule so that you will get the exact length you require. In connecting all of our syphon wash-down, low-tank closets, however, it requires a 4x14 lead bend and ferrule. The manner of connecting the closet with this lead bend has been previously explained, so that requires no further explanation here.

THE COMBINATION FERRULE. This is exactly the same sort of fitting as the bend and ferrule except that it has no bend. This is used in making

connections where there are several closets connected in line with a line of soil pipe running underneath, as shown in (figure 46). In this case of course there is no bend required—the lead ferrule answers the purpose.

THE LEAD BATH TRAP. Purpose and manner of connecting already explained. We will say here, however, that we can furnish these traps with either iron pipe connections or without any connections leaving the matter of connecting entirely with yourself. If you decide to use lead waste pipe the proper trap to use would be plain lead pipe and you could solder the waste pipe on yourself. If you are intending to use iron waste pipe, we would advise that you order the threaded bath trap with the iron pipe connections right on.



THE STANDARD SANITARY TEE. This is an ordinary soil pipe fitting used simply to connect any of the various fixtures into the soil pipe. The 4x4 tee is always used to connect the closet with the soil pipe, and as a general rule where there is bath tub and lavatory to be connected with the soil pipe also, this tee is specified with the side inlet. We can furnish this tee with either a right or left hand side inlet as desired. The usual method of making the connection is to connect the closet directly into the main outlet of the tee and then combine the lavatory and the bath tub into a single 1½-inch connection which can be connected into this side inlet of the tee. If you use lead pipe the proper way to connect this would be to insert a 2-inch ferrule inside of the soil pipe and then caulk the lead pipe into this side opening. If you are using galvanized iron pipe you can caulk the iron pipe right into the opening without any trouble. We can furnish these tees of suitable size for connecting any of the various sizes of pipe with the soil pipe. For instance, if you want to connect the sink to a 4-inch soil pipe stack and you have a 4x1½-inch iron pipe connection on the sink, you can connect it with the soil pipe by using a thread. This is our No. 16 tee in our catalog, cut of which we show in (Figure 49). We can also tap the side outlet of this tee 2-inch, if desired.

The other various soil pipe fittings, such as quarter-bends, one-eighth-bends, "Y" branches, etc., hardly require any detailed explanation, as the particular connection which is necessary to make will easily determine which of these fittings you will need. We have a complete assortment of these all fully described and illustrated in our catalog and by carefully examining the illustrations you can tell, by noting the size connection you will need to have, which one you will want. The main thing to be remembered is that we can furnish these tees tapped for iron pipe or for caulking as desired. We do not furnish them tapped for any size pipe larger than 2 inches, and we can bush these 2-inch openings down so that they will fit any small size of pipe desired. In connecting lead pipe with these tees the proper way is always to use a brass ferrule to support the sides of the lead pipe and then caulk it right into the opening in the ordinary manner.

FIG. 45.



We allow you \$5.00 if you design your own system.

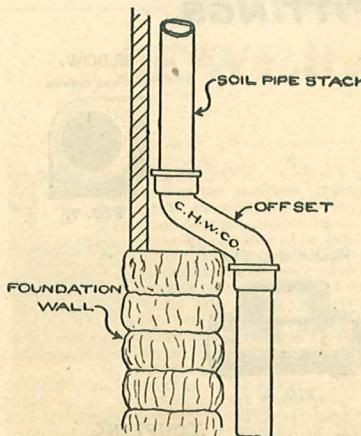


FIG. 50.

of soil pipe together, neither of which has hubs on the ends. It helps to cut down the waste. For instance, if you had a short piece of soil pipe with no hubs on it you would have to throw it away were it not for the fact that you can use a fitting of this kind to make a connection with it.

THE SOIL PIPE requires no explanation. We might state here, however, that this soil pipe comes in two ways—the standard weight, and the extra heavy. The standard weight is what we always figure on for country jobs. This standard weight soil pipe is just as serviceable in every way as the extra heavy and will last a life time, so that there is no particular advantage gained in using extra heavy pipe. City ordinances, however, usually call for extra heavy pipe and this is the reason that it is necessary to use it. If you are not working according to ordinances standard pipe will give you just as good satisfaction and we would not advise you to go to the expense of using extra heavy. If the pipe on your job is standard pipe it will mean, of course, that all of the fittings will have to be standard, and vice versa.

In making up the bill of material on an ordinary job where the building is two stories high it usually requires about 25 feet of soil pipe to make the soil pipe stack from the ground line to the roof. Several of these lengths will, of course, have to be cut and for this reason we usually figure about 3 lengths of single hub soil pipe and 2 lengths of double hub soil pipe. By cutting the double hub lengths you will be able to use the pieces which you cut off, as there will be a hub on each end. This is the reason we figure on some lengths of the soil pipe to be double hub.

THE LEAD "P" TRAP. This makes a very neat connection for use in connecting the kitchen sink with the soil pipe and it has an advantage over an "S" trap in that it goes to the wall instead of to the floor, so that it is easier to get around in under the sink to sweep the floor, etc. We can furnish these traps in either iron pipe connections or plain and we can furnish you with the solder nipples to solder on yourself if you desire.

THE LEAD "S" TRAP. Exactly the same as the "P" trap except that it goes to the floor instead of the wall. We recommend that "S" traps of this kind always be vented out of the top. You can do this by punching a hole in the top in the round of the trap, as shown in (Figure 53), and soldering on a brass soldering nipple or bushing, carrying the vent pipe to the wall and turning it up to the roof with galvanized iron pipe. If you use a "P" trap connect it directly into the soil pipe stack—there is no need of venting it. Simply carry the soil pipe stack to the roof and this will be sufficient, as has already been explained.

STOP AND WASTE COCK. The purpose of this is to provide a suitable means of shutting off the water in winter time and at the same time allowing all the water in the pipes of the plumbing system to run back out of the pipe and do away with the liability of the water freezing. A careful examination of one of these stop and waste cocks will make it clear that as soon as the water is shut off there is a new opening made out of the side of the fitting so that the water can run out of the pipes and waste away into the ground. If you have city water supply it is good policy to have one of these stop and waste cocks at the point where the water comes into the building and have a shut-off rod connected with it as shown in (Figure 54). This shut-off rod is connected with this fitting by simply taking a hydrant clamp and placing it down over the tee handle and taking some stout copper wire and twisting it in through the holes and winding it up tight. You can screw an ordinary $\frac{1}{2}$ -inch pipe on this hydrant clamp for the shut-off rod.

We can furnish these stop and waste cocks with tee handles or lever handles as desired. If you intend to place this stop and waste cock under ground and use a shut-off rod, the tee handle, of course, is the proper form to use.

THE FAUCETS. The two standard forms of faucets are the compression faucet and the Fuller faucet. The Fuller faucet is much the better faucet to use where it is being constantly opened and closed, for instance, on a kitchen sink, etc. However, in places where the faucet will only be opened once or twice a week or less frequently than this we recommend the compression faucet for the simple reason that it makes a tighter closure and permits a larger flow of water. This compression faucet is especially desirable for draining the range boiler, etc., where a large opening is necessary to allow the mud and sediment to pass through with the water.



FIG. 51.

Offset with top open-

FIG. 52.
Ventilating
Branches.

(Figure 52) shows this form of fitting. This fitting is entirely unnecessary unless your ordinances compel you to use it. If you are located in the country and are not tied down by ordinances you will have no occasion to use this fitting.

THE INCREASER. This fitting is usually placed at the top of the soil pipe stack. It has no particular advantage and the soil pipe itself will answer just as well; in other words, unless your city ordinances compel you to use a fitting of this kind at the top of your soil pipe stack we would not advise you to go to any expense by adding one of these increasers to your bill of material. There is no particular advantage gained in its use; we never figure on this fitting unless requested.

THE DOUBLE HUB. This is used to connect two lengths

of soil pipe together, neither of which has hubs on the ends. It helps to cut down the waste. For instance, if you had a short piece of soil pipe with no hubs on it you would have to throw it away were it not for the fact that you can use a fitting of this kind to make a connection with it.

THE SOIL PIPE requires no explanation. We might state here, however, that this soil pipe comes in two ways—the standard weight, and the extra heavy. The standard weight is what we always figure on for country jobs. This standard weight soil pipe is just as serviceable in every way as the extra heavy and will last a life time, so that there is no particular advantage gained in using extra heavy pipe. City ordinances, however, usually call for extra heavy pipe and this is the reason that it is necessary to use it. If you are not working according to ordinances standard pipe will give you just as good satisfaction and we would not advise you to go to the expense of using extra heavy. If the pipe on your job is standard pipe it will mean, of course, that all of the fittings will have to be standard, and vice versa.

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THE LEAD "P" TRAP. This makes a very neat connection for use in connecting the kitchen sink with the soil pipe and it has an advantage over an "S" trap in that it goes to the wall instead of to the floor, so that it is easier to get around in under the sink to sweep the floor, etc. We can furnish these traps in either iron pipe connections or plain and we can furnish you with the solder nipples to solder on yourself if you desire.

THE LEAD "S" TRAP. Exactly the same as the "P" trap except that it goes to the floor instead of the wall. We recommend that "S" traps of this kind always be vented out of the top. You can do this by punching a hole in the top in the round of the trap, as shown in (Figure 53), and soldering on a brass soldering nipple or bushing, carrying the vent pipe to the wall and turning it up to the roof with galvanized iron pipe. If you use a "P" trap connect it directly into the soil pipe stack—there is no need of venting it. Simply carry the soil pipe stack to the roof and this will be sufficient, as has already been explained.

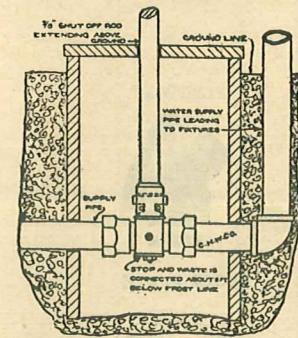


FIG. 54.

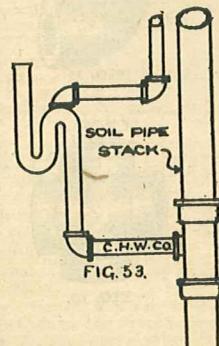


FIG. 53.

CAST IRON PIPE FITTINGS.

ELBOW.

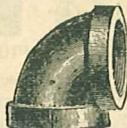


FIG. 3.

REDUCING ELBOW.

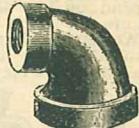


FIG. 5.

ELBOW.



FIG. 7.

TEE.

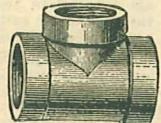


FIG. 4.

REDUCING TEE.

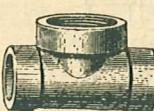


FIG. 6.

Nip plate

REDUCING COUPLING.



FIG. 14.

COUPLING.



STREET ELBOW



FIG. 84.

PLUG.



FIG. 13.

CAP.



FIG. 16.

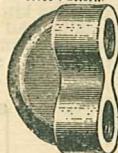
RETURN BEND
Close Pattern

FIG. 17.

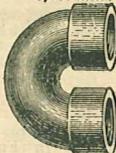
RETURN BEND
Open Pattern

FIG. 18.

LOCKNUT.



FIG. 19.

FLANGE UNION.



FIG. 28.

CROSS.

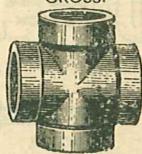


FIG. 10.

REDUCING TEE.

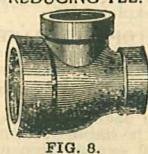


FIG. 8.

ELBOW 45°



FIG. 9.

BUSHING.



FIG. 11.

CEILING PLATE



UNION

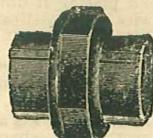


FIG. 20.

FLOOR PLATE



We give herewith a complete illustrated table of all the various forms of standard threaded pipe fittings with the name of each given over it. Should you have occasion to use any of these fittings you can very easily tell from these illustrations which particular fitting you need. We can furnish these to fit any of the various sizes of standard pipe.

SEWERAGE SYSTEMS.



THE CESSPOOL. (Figure 55) shows a very clever construction of cesspool, which is less liable to become stopped up and will last a much longer time than any other arrangement which could possibly be devised. The greatest objection to a cesspool is its liability to clog and become water-tight. This usually takes place in a very short time in compact soils or in fine sand. The bottom soon becomes choked with sediment and grease and the water line rises until the cesspool becomes entirely filled up. Then the only remedy is to build a new one. By using the arrangement shown in this illustration, however, these objections are done away with. The aim of the design is to arrest the sediment and scum and bring comparatively clear liquid in contact with the absorbing surfaces, thereby prolonging the life and usefulness of the cesspool indefinitely. A careful study of the conditions existing in the cesspool led to this design. It has been found that there are three distinct layers in every cesspool: First, the sediment layer at the bottom; second, the clear liquid; on top of this the grease and scum, as shown in this illustration. It will

be very clearly seen that by using a trap arrangement with the end outlet below the clear liquid line the grease and scum will be entirely prevented from getting up into the outside of the cesspool where the water is allowed to soak away.

There is of course a constant chemical decomposition going on in every cesspool, and this scum gradually decomposes and turns to clear liquid, passing away in the usual manner.

The main idea in his construction is that this grease and scum does not get to the outside of the cesspool until it is decomposed, so that it cannot choke up the openings and prevent the water from soaking away.

A cesspool of this kind will last several years without cleaning and if the sediment is cleaned out from time to time it can be kept in serviceable condition for many years.

The cesspool, together with the air pressure water supply systems and other special conveniences which are to be had in these days, makes it possible for one to enjoy all the comforts of a city home in a country residence. You do not need to live in a city nowadays to have all these conveniences.

As to the actual connection with this cesspool, this of course consists simply in carrying the waste water from the building and connecting it in as shown in the illustration. The pipe marked "Inlet" represents the pipe leading from the building. You will also note that there is a clean-out hole provided in the top of this cesspool, with an iron cover which can be removed at any time and the cesspool carefully cleaned out.

SEWERAGE SYSTEMS IN CITY DWELLINGS. The usual arrangement of carrying the waste water from dwelling houses in large cities is to carry all of the water from the sinks separately into a cesspool or "catch basin," as it is usually called, in the rear of the premises and then piping the water out of this catch basin into the sewer in the street outside of the building.

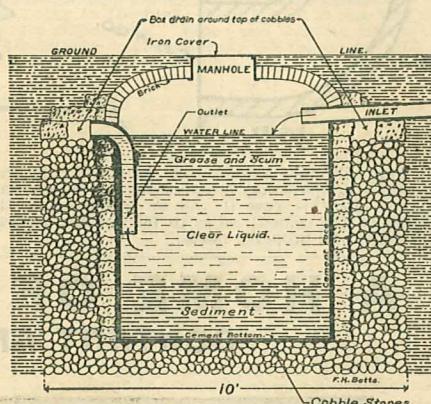
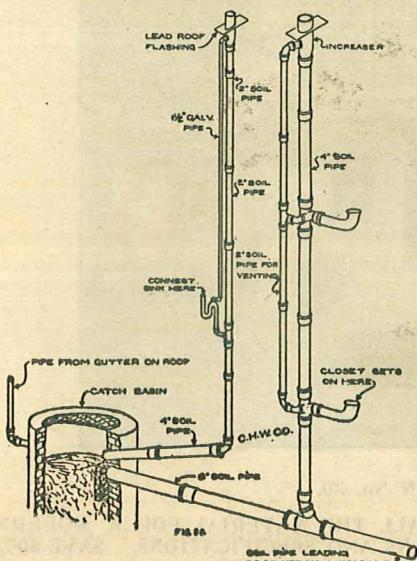


Fig. 55.

The city ordinances always compel separating the sink water from the other water in the building in order that the grease, etc., may be trapped before it goes to the main sewer.

The purpose of the catch basin is to catch this grease and prevent it from getting out into the main sewer in the street and stopping it up.

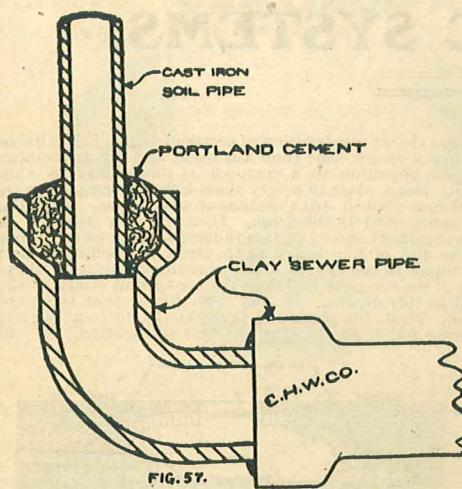
Figure 56) shows a diagram of how the connections are always made to a city building.

The main soil pipe from the bath room fixtures, closet, etc., is never connected into the catch basin; this is connected directly into the line of pipe which connects with the main sewer in the street, as shown in the above diagram.

This diagram shows clearly the direction of the pipes in making all of these connections, showing the proper pitch, etc.

The above brief description of the various methods of disposing of the waste water covers practically all there is to this part of the system in an average dwelling house.

**Write us for suggestions.
We are always ready to
help you.**



These connections are usually made under ground with ordinary glazed sewer tile.

We never use cast iron soil pipe to make these connections unless explicitly specified.

In figuring our plumbing jobs we only figure the soil pipe to the ground line.

From this point on we assume you can use ordinary glazed sewer tile to make the connection with the sewer or cesspool. It is always good policy to use "Y" branches in making these connections so as to give the water a gradual turn.

Straight turns are to be avoided in making waste pipe connections of this kind.

Sewer tile is much cheaper than soil pipe and answers the purpose just as well, especially when freight is an item.

Sewer tile can usually be secured in all parts of the country and the cost is universally very low.

It does not pay to ship this sewer tile from Chicago for the simple reason that the freight to any reasonable distance would amount to much more than the actual value of the pipe itself.

Connection to this sewer tile is always made with the standard grade of Portland cement.

To connect soil pipe with the sewer tile simply place the end of the soil pipe down into the elbow for whatever fitting is used and carefully cement it all around.

This will make a good, tight joint and is all that is necessary. If the sewer tile is very much larger than the soil pipe it may be necessary to use some sort of filling or something of that nature to support the cement. In this case it will be well to wrap the end of the pipe around carefully with oakum before putting on the cement, so as to fill out the vacant space. (Figure 57) shows how a connection of this kind should be properly made.

A HOME OF YOUR OWN. CONTENT AND COMFORT.



OUR HOUSE DESIGN No. 30.

LET US MAKE YOU A PROPOSITION ON ALL THE MATERIAL FOR A MODERN COZY HOME. WE GIVE YOU COMPLETE PLANS AND SPECIFICATIONS. SAVE 50% ON MATERIAL BY CUTTING OUT THE MIDDLE MAN'S PROFITS.

WATER SUPPLY SYSTEMS.



THE ELEVATED TANK SYSTEM. This consists simply in using some sort of a storage tank located at a proper elevation to store the water, and having a line of piping connected with this tank and a suitable pump for pumping the water up into same. There are many different methods used, some having the tank located on a large steel tower out of doors and others right in the building, in the attic at some convenient point. We have a full supply of galvanized attic Storage Tanks fully illustrated and described in our catalog. There are two general forms—one, the round tank, and the other, the oblong tank with round ends. If a large tank is to be used this latter is the most desirable for the simple reason that it takes in more rafters in the attic and does not produce such a great strain on the partition walls of the building. For the small tank the round tank is probably the most desirable. These tanks which we quote are heavily galvanized and made out of good, strong material and substantially made in every way. They will last for many years.

This is a very simple method of supplying water, and furthermore, it is very inexpensive, that is, in first cost. Simply place a suitable pump in your basement with a proper suction pipe connection with your well or cistern and carry a line of pipe from the pump to the tank, about 1-inch in size and place a check valve on this line close to the pump, and also a globe valve. When you want to fill the tank simply start the pump going and by having a small $\frac{1}{2}$ -inch pipe connecting near the top of the tank and brought down to the point where you are pumping you can tell when the tank is full by the water coming out of this spout.

(Figure 58) shows a complete House Plumbing Outfit with all the connections illustrated, using one of these storage tank systems of water supply.

We do not furnish these galvanized tanks with any connections or openings of any kind in them; they are shipped intact.

When you get the tank simply take a pointed tool of some kind and punch a hole through it wherever you want the opening; then file the sides of this hole until it is large enough to receive a solder nipple of the size pipe that you will need.

Now solder on the solder nipple very carefully, as has already been explained in the previous part of this book.

You can also solder on a $\frac{1}{2}$ -inch solder nipple to connect the $\frac{1}{2}$ -inch over-flow pipe.

When the tank is located in the attic of the building connections to the various fixtures can be taken right out of the main standpipe which leads from the pump to the tank, so that a separate connection with the tank to these fixtures is not necessary.

The water will flow right back out of this pipe and supply the fixtures.

The cold water supply to the range boiler is also connected out of this pipe in the usual manner.

This method of water supply is the most simple and inexpensive system that could be possibly used.

LEAD. The only disadvantage it has, is that it keeps a very heavy weight constantly resting on the rafters in the attic and this is especially undesirable if the building is not very strongly constructed with heavy rafters, etc.

OAKUM. Of course this objection can be somewhat overcome by using a long round end tank which will take in many rafters and the weight will not be concentrated so much.

The other disadvantages of this system are, that the water gets very warm in the summer time and also it is liable to freeze in the winter time.

This objection can also be overcome by inserting a steam or hot water coil down in the tank and connecting same with the steam or hot water heating system in the building. If you have not a steam or hot water plant, of course it would not be possible to do this.

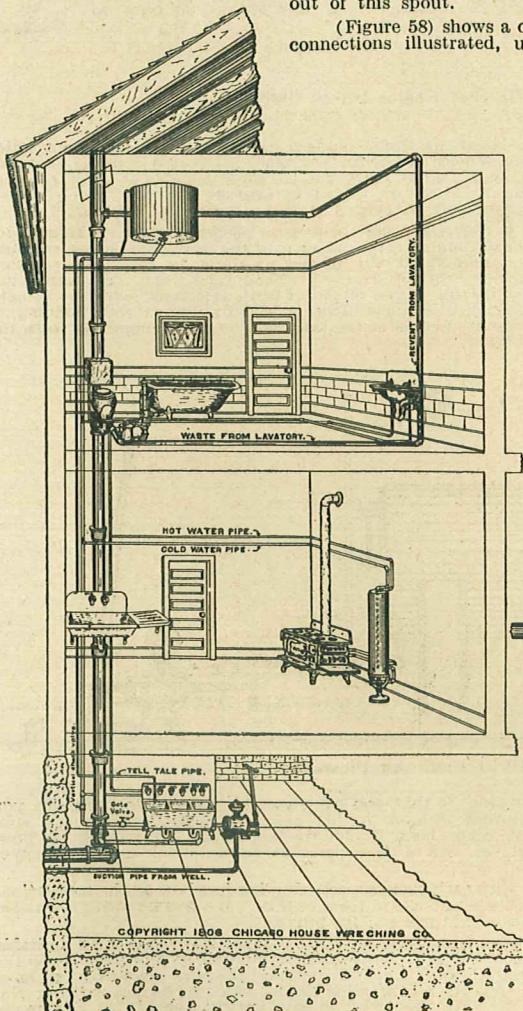


Fig. 58.

It requires a little careful figuring so as not to get the coil too large so that it would heat the water to too high a temperature for proper use. The idea is to just keep the water from freezing. This coil can be controlled with a valve and in the mild weather it does not need to be left in operation.

Other difficulties in connection with a system of this kind is that the tank being so very large, that is, in most cases, you would not be able to get it in the attic without tearing out a wall or something of that kind and also the fact that a good strong forcible pressure cannot be secured. This has to be overcome by using a size larger pipe to supply the various fixtures in the building.

All of these various objections are over-come by using an Air Pressure Water Supply System.

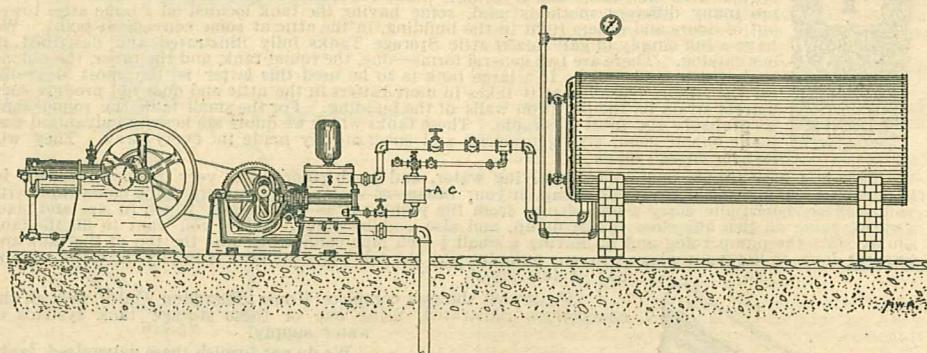


Diagram View Gasoline Engine Driven Outfit.

AIR PRESSURE SYSTEM. This is the latest and most modern development of supplying water to country homes that is known to engineering science at the present time. It is only recently that this method of supplying water has become so popular. A few years ago, the great benefits and conveniences of a system of this kind were never fully realized. However, the advantages are becoming widely known now and the number of these air pressure systems that are being installed is increasing very rapidly.

As far as the practicability of this system is concerned and the general efficiency, etc., nothing better could be wished for. The principle, is of course, pumping the water into the tank against the pressure of the air and then supplying an additional amount of air under pressure, to raise the pressure to the proper point. The air being elastic, will of course expand and force the water out of the tank at the least opportunity. By connecting a line of piping with this tank, which is usually taken out of the bottom of the tank and carrying it around to the various fixtures in your building, it will be readily seen that the pressure of the air at the top of the tank will be great enough to force the water throughout the building to any point desired.

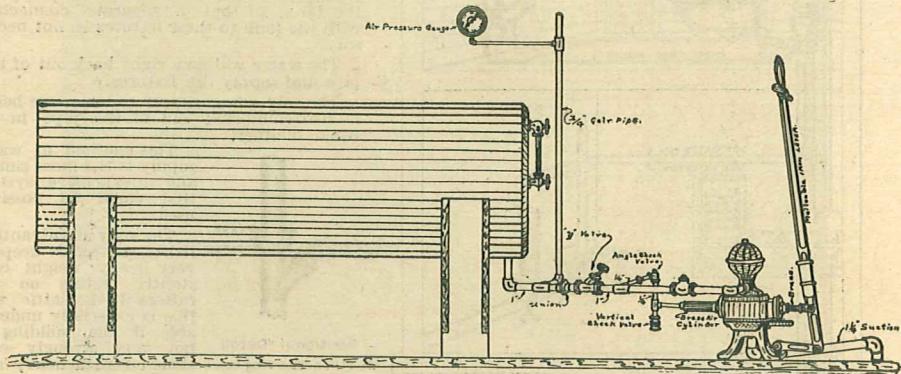


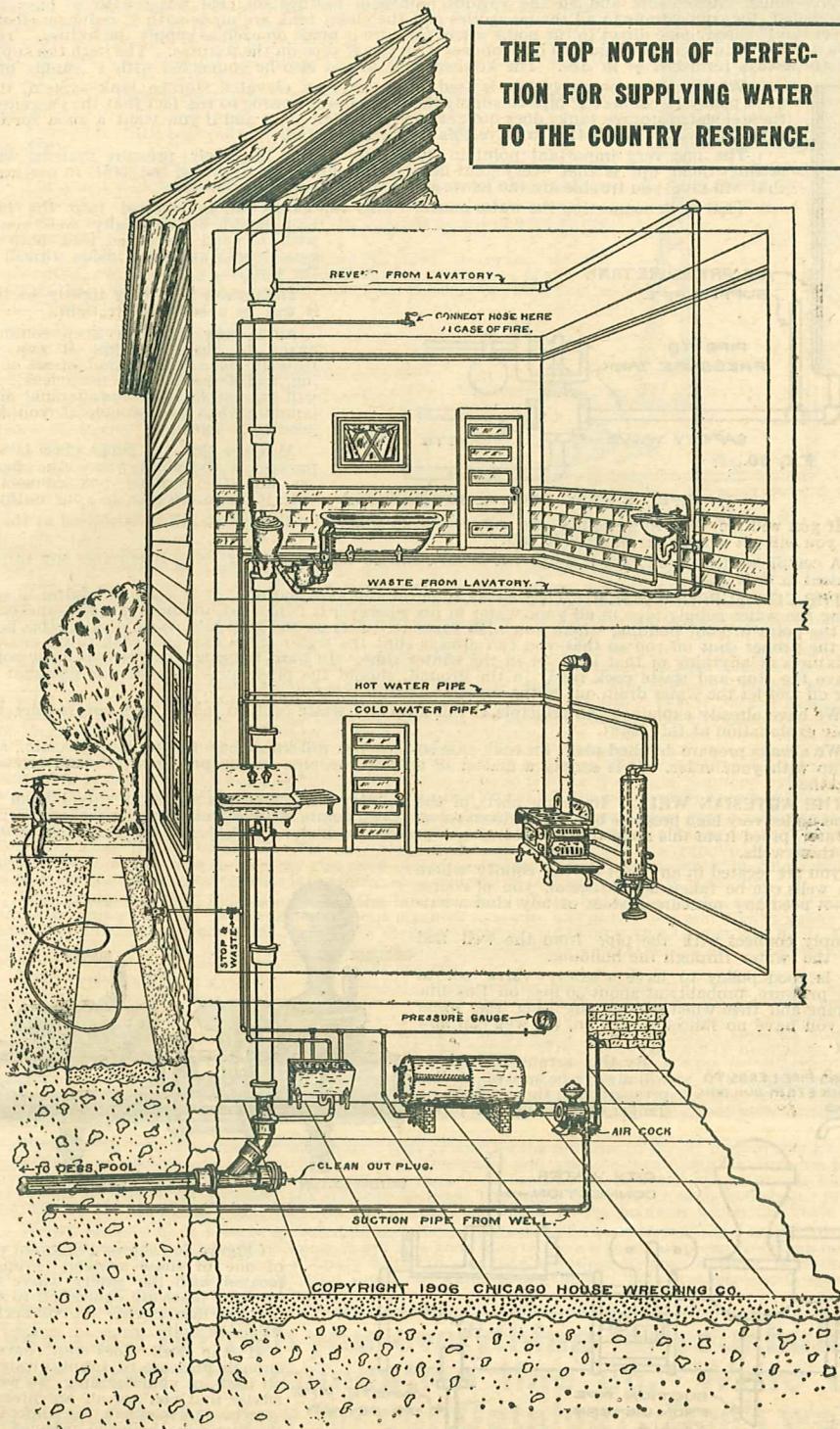
Fig. 59. AP 21 Outfit Air Pressure.

The great advantage of a system of this kind, is that you can raise the pressure to any point you desire, within 100 lbs. The tanks which we furnish with our outfit are very heavy, strong and substantially made in every way, the horizontal seams being double riveted, so that you can get the pressure up to this point without any trouble whatever. All of these tanks are absolutely air tight and perfect in every way.

We furnish a complete detailed blue-print with each outfit we sell, showing just how all the connections are made and a fourteen-year-old boy could easily set up one of these outfit. We give herewith a detailed cut showing the relative position of all the various fixtures and the pumps.

We furnish our No. A. P.-1 outfit with a separate hand air force pump. This is the most desirable arrangement, as it simplifies matters very much. It is a more modern method of supplying air to the tank, owing to the fact that you can control it exactly as you require the air. However, we have found by experience and practical experience that the combination pump which we furnish with our No. A. P.-21 outfit, can be absolutely relied upon to work properly and give satisfaction. This is a much cheaper arrangement, and if you wish to figure close on your outfit, you will make no mistake in placing your order for one of these No. A. P.-21 outfit with this combination pump, as illustrated. (Figure 59) shows our No. A. P.-21 air pressure system showing the relative position of the various fixtures, etc., and the sizes of all the various sizes of pipe marked.

THE MODERN AIR PRESSURE SYSTEM.



After the outfit is installed, of course it is a very simple matter to connect the proper size pipe to all the various fixtures in the usual manner. Use $\frac{3}{4}$ " pipe to start out from the tank and branch off to supply the range boiler, kitchen sink and all the various bathroom fixtures for cold water with $\frac{1}{2}$ " pipe. As before stated, the connections to all the lavatories and the closet tank are made with $\frac{3}{8}$ " reducing elbows. Connect the $\frac{1}{2}$ " supply pipe direct to the point where the turn is made on each to supply the fixture. Then put on a $\frac{1}{2} \times \frac{3}{8}$ " reducing elbow and you can connect with the $\frac{3}{8}$ " pipe on the fixtures. The bath tub supply pipes are always furnished $\frac{1}{2}$ " in size. The kitchen sink should also be connected with $\frac{1}{2}$ " supply pipe.

When an air pressure system is used if you have an elevated storage tank system, it is good policy to connect $\frac{3}{4}$ " pipe to supply the kitchen sink, owing to the fact that the pressure in these elevated storage tanks does not get to a very high point and if you want a good forcible supply of water, it is better to have this larger sized pipe.

The one very important point in connection with these air pressure systems when setting them up, is that every joint must be absolutely air tight and the joints in particular that will give you trouble are the joints above the water line in the tank.

That is, in connecting the water gauge. This top gauge can be screwed into the tank and should be especially well coated with a good thick red lead, both the gauge cocks and the inside thread in the tank.

Then screw it in very tightly so that it will be absolutely air tight.

Air is very hard to keep confined, owing to the fact that it can get through the smallest kind of an opening, and if these connections leak, you will have to do very considerable more pumping than you would, if you had good tight joints.

Also, see that the gauge glass is well packed at the point where the bends are and the stuffing box connecting with it, in connecting up your outfit.

If you will see that these joints are all made up good and tight, you will be surprised at the results you will get when your outfit is in use.

A complete instruction card is sent with each outfit so that we hardly think it requires any further comment in these pages.

THE CITY SUPPLY SYSTEM. This hardly requires any explanation. It is a simple matter in connecting the water supply pipe in all your water mains wherever it is located, in about $\frac{3}{4}$ " pipe, and carry it to the point in your building where you wish to use it. Put on the stop and waste cock at this point with the proper shut off rod so that you can always shut the water off in case you wish to disconnect the fixtures or anything of that kind, or in the winter time. In hard freezing weather it is good policy to have the stop and waste cock ready in the ground, should the pipe burst, so that you can shut the water off and let the water drain out of the top and prevent freezing.

We have already explained the principle of this stop and waste cock so that it does not require any further explanation at this point.

We always prepare detailed plans for each case so that you will know how to run the pipes, etc., that we ship with your order. It is simply a matter of cutting the pipe to the proper length and screwing it together.

THE ARTESIAN WELL. In many parts of the country the water can be taken direct from the ground under very high pressure by drilling down to very deep points and inserting a pipe and then carrying the water, piped from this main to the building. A pressure as high as 150 lbs. can sometimes be secured from these wells.

If you are located in any part of the country where these wells can be taken advantage of, you of course will not need any pressure system of any kind whatever.

Simply connect with the pipe from the well and pipe the water through the building.

It is good policy to have a safety valve set at some pressure, probably at about 50 lbs., on this line of piping and then when you are not using the water and you have no faucet turned on, the well can flow freely.

By this arrangement, you will always be sure of 50 lbs. pressure and there will be no danger of bursting the pipes.

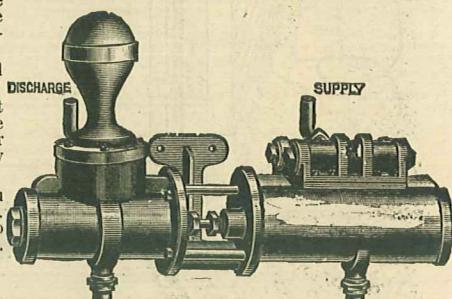
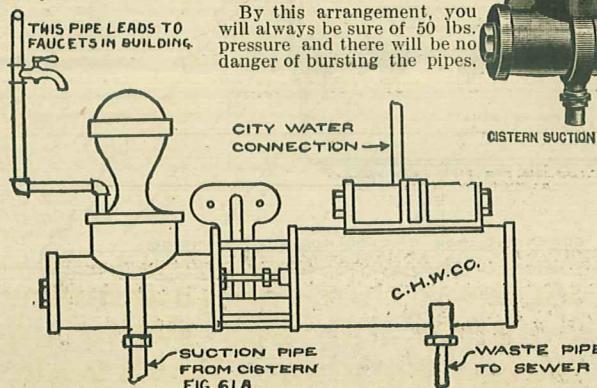


Fig. 61.

(Figure 60) shows a diagram view of one of these systems properly located with the safety valve and how the pipes are connected to supply the house, etc., in connection with the well.

If the well does not develop enough pressure to supply water to all parts of your building, we would advise that you use an air pressure system and connect the pipe with the pump in the usual manner.



GASOLINE ENGINE. The great advantages derived from using a small engine to pump the water in connection with one of these air pressure outfit can never be fully appreciated until it is once tried.

All you have to do is give the engine one turn and get it started and let it run for five or ten minutes, depending on how large your tank is and then shut off the sparkler and you have enough water to last you for two or three days.

There is absolutely no manual labor required or no exertion on your part.

A very nice little pumping engine can be secured for a price of not over \$60.00.

An investment of this kind is certainly well worth while.

The amount of gasoline used is really so small that it need not be considered.

Ten cents a week will pay for all the gasoline your will need to run the engine.

We furnish complete instructions showing how to make all the connections, etc., and an instruction card is sent with each of our engines so that you will understand fully just how to set it up, etc., and to properly operate it.

A very short experience in running the engine will get you fully familiar with all the details and when you have an outfit of this kind, you can be assured that you have all the conveniences of a city home.

WATER LIFT. (Figure 61) shows one of our Perfection Water Lifts.

This is an automatic pump which pumps water automatically, operating by city water pressure. Of course it makes no difference where the water pressure is secured, or whether it is city pressure or any other kind of pressure. It will pump cistern water or any other water if you desire.

This water lift is only used in connection with the city supply system which supplies hard water. There are many cities which supply water to buildings which is too hard to be used for washing and in cases of this kind the solution of the problem is to install one of these water lifts in the basement or at the kitchen sink or any convenient point and connect the city water pipe into the power cylinder on the water lift and connect the discharge outlet from the power cylinder with the waste pipe. You can connect this discharge outlet with any waste pipe in the building. The water in the main soil pipe stack, if convenient.

The other cylinder on this water lift is called the pumping cylinder. This cylinder is usually of smaller diameter than the power cylinder and there are two openings on this also. One is for the suction pipe and should be connected with your cistern where you can get the soft water and then connect the discharge pipe to your kitchen sink or range boiler or your bathroom fixtures, etc. Just as soon as you open a faucet on this line of piping, leading from the pumping cylinder, it releases the pressure and the water lift immediately starts to pump, owing to the high pressure in the power cylinder. This water lift is automatic in its action and as long as you keep this faucet on the line of pipe leading from the pumping cylinder open, the pump will keep on working. As soon as you turn this faucet off, the pump stops automatically.

There is no necessity of having an intermediate storage tank or anything of that kind in connection with one of these pumps. (Figure 61) shows a complete diagram view of one of these water lifts with all the proper connections indicated. The conditions under which your water is supplied to you in your building will determine as to whether you need one of these lifts or not. If the water in your building is too hard, to give satisfactory results in washing, etc., you will of course need one of these lifts.

We furnish complete instructions showing how to make all the connections, etc., with any of these water lifts which we sell. We have made it our business to secure one of the best and highest grade water lifts on the market, and our price on this lift in different sizes is \$35.00. Our largest size lift is \$40.00. This larger size lift is only used to supply exceptionally large buildings, such as hotels, etc. For the average residence, any of our smaller sizes will be large enough.

THE COMBINATION SYSTEM. This consists in connecting the elevated tank with the air pressure tank in such a manner that the pump will keep the air pressure tank constantly supplied with water at the proper pressure. As soon as this pressure gets to a higher point than that desired, the water starts to flow to the elevated tank. This system, is of course, never used on small supply systems, such as a small supply system for a building or anything of that kind. Where it is commonly used is on a very large farm where the elevated tank has already been installed at some previous time for watering stock, etc., and the air pressure tank is used to supply the requirements of the building. It is usually used in connection with a windmill pumping outfit. The windmill pump is usually kept going at all times, the tank keeping automatically filled at the right pressure. (Figure 62) shows a diagram view of the tanks with a connection of this kind.

By referring to this diagram, it will be seen that as soon as the pressure in the air pressure tank exceeds the point at which the safety valve "A" is set at, the water will start to flow along through the pipe to "B" to the elevated tank and continue to fill this tank. As soon as the faucet is opened in the building, and the pressure in the air pressure tank starts to decrease, the safety valve will close up and the air pressure tank will be automatically again set until the pressure gets back to the point at which the valve is set.

If you already have a large elevated tank out-of-doors not elevated to sufficient height to supply your requirements in your dwelling house, it will be a good idea to have a small air pressure system installed in the basement of your building to supply water to any height desired in your fixtures, as outlined in this sketch, and you will have a plentiful supply of water at all times. This arrangement is absolutely automatic and it requires no attention whatever.

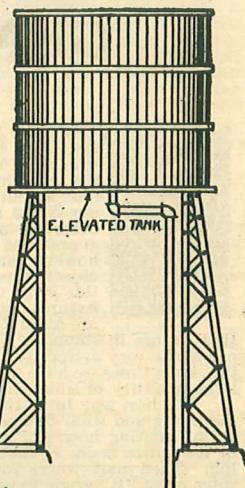


FIG. 62.

We can furnish you everything for your building from the foundation line up. Write us at once--to-day for our Catalog. Don't wait.

GENERAL POINTERS.



ELECTING AN OUTFIT. We are always very glad to give our customers every possible assistance and advice in selecting their fixtures for their building. There is one point which has to be determined and that is whether you want strictly first-class fixtures all the way through. Our standard complete sets, such as our No. 3½ bathroom outfit, etc., are all strictly "A" grade fixtures, except where otherwise mentioned. For instance, our No. 2 bathroom outfit which states that the bath tub is class "B," and unless otherwise mentioned, these outfits are all furnished in "A" grade material. They are guaranteed up to representation in every way. If you wish to figure close on your job, however, and want to get as reasonable an outfit as you possibly can and would have no objection to having fixtures slightly damaged in the enamel, we want to advise you at this point that we always have on hand a constantly changing stock of these "B" grade fixtures of every description: bath tubs, closets, lavatories, sinks, etc., all of which are absolutely brand new fixtures which have been slightly chipped or something of that nature in shipping. For instance, the bath tub may have a slight chip out of the enamel. We can make very attractive figures on these bath tubs and other fixtures, and as our stock is always changing, sometimes we have a large quantity of 5-foot bath tubs in this condition; sometimes we have a large quantity of sinks, etc., it is necessary to get in touch with the actual conditions.

The best way to do this is to make a selection from our catalogue and give us an idea what your tastes are and what fixtures you actually need, and send us in a rough sketch of your kitchen and bathroom, showing how you would like to have the fixtures located. You might make this a floor plan of the entire floors so that we can see the relative position of the bathroom and kitchen in your building. Then mark where you would like to have the fixtures placed and let us know if you would consider using "B" grade fixtures at any point, and we will go through our entire stock and see the best bargains we have to offer you, and we will make you a complete quotation by return mail.

By following this scheme, you will be able to get some exceptional bargains in your fixtures, and you will be really surprised at the price we can make you.

As to the piping and roughing in material, this is always furnished brand new. We do not have any second hand soil pipe or galvanized iron pipe that we could use to pipe any plumbing systems, and we always furnish our customers with brand new material to rough in the job. The greatest saving is always made on the fixtures themselves. We do not mean by this that our prices are not right on the piping, etc. We are always far below the market prices on all of this roughing in material and our customers are fully benefited by the low prices which we offer.

In asking for quotations, let us know if you wish us to make you a quotation, freight prepaid to your station, or F. O. B. cars, Chicago, and be sure to let us know what style fixtures you would like to have mentioned in the catalogue numbers.

DO YOU WANT TO FIGURE CLOSE ON YOUR JOB? There are many ways of getting around connections, etc., so as to cut down the cost of the plumbing system and get just as good results in every way. As has been intimated already in these pages, there is more money wasted in surplus piping and useless connections, etc., in plumbing systems that would

make many large fortunes. Figure 63 shows a simple arrangement for connecting a bathroom outfit and kitchen sink on the first floor. It will give just as good results in every way. That is, if you are not compelled by city ordinances, etc., to extend this 4" soil pipe stack the entire height of the building. You will see that it is much more

simple and does away entirely of going through the roof with the main soil pipe stack and is just as sanitary a system in every way. The purpose of this vent pipe, is to supply air to the traps so as to break the siphon action. Also to relieve the pressure of any sewer gases that might develop. This 1½" vent pipe is plenty large to do this, and is much easier installed and costs less money.

If you wish to install your system in this way, we can make you a lower figure than using a 4" soil pipe stack clear to the roof.

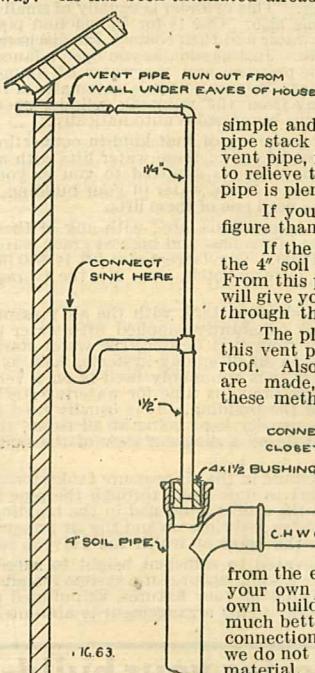
If the closet is located on the second floor, however, it is necessary to have the 4" soil pipe stack go to the point where the closet connection is made. From this point on you can continue this 1½" extension pipe to the roof. This will give you just as good results if you wish to get away from having to cut through the roof at all.

The plan shown in Figure 63 is sometimes used. That is, simply running this vent pipe out through the wall of the building instead of out through the roof. Also, if the chimney stack is handy at the point where the connections are made, this pipe is sometimes connected with this chimney. Any of these methods of venting will give good satisfaction.

If you are placing an "S" trap on your sink or on the lavatory, it is certainly good policy to vent carefully all these fixtures, as illustrated in Figure 63. In connecting up this vent pipe, in a plumbing system, always remember that it is necessary to connect this vent pipe above the highest fixtures on the top for reasons that can be very easily appreciated, by giving this matter a little study.

CAN YOU FIGURE YOUR OWN BILL? Another very important point in regard to getting off as easy as you can from the economical stand point on your plumbing system, is to figure up your own system entirely. You being right there on the ground and in your own building can measure up exactly the amount of piping that you require much better than we can. We have fully explained all the general pointers in connection to the fixtures, etc., and if you will give these a little careful study, we do not think you will have any trouble in making up your own bill of material. We have explained all the various fittings, and how all the various fixtures are connected, etc., and by following this scheme, you would get

the exact amount of fittings that you require. Without any question, whatever, if we figured your job, we might figure on ten or twelve feet more pipe than you would really need and we would have to charge you for it in the original estimate. We always like to figure liberally on our estimates so as to be absolutely sure that you will not run short. We make special inducements to our customers who can figure their own bills of material and send us an itemized list on everything in regard to plumbing material; also in regard to a heating plant.



When you count up your own bill of material, this does away with the necessity of our having to make you up working drawings, etc., as you understand very clearly how all the connections are to be made. We are therefore very willing to give our customers the benefit of this expense. We usually allow our customers a discount of \$5.00 on any order placed with us for an itemized bill of fittings, roughing in material, fixtures, etc., to complete an ordinary job, where it is not necessary for us to make up working drawings. You will therefore see by figuring in this way you will save anywhere from \$10.00 to \$15.00 on your system over what our actual prices really figure in various cases. It is therefore not hard to appreciate how it is possible for you to save anywhere from \$150.00 to \$200.00 on an average job of this kind over plumber's prices.

We have explained fully how to use all the various tools, and any man with average intelligence certainly should have no trouble whatever in getting the entire system installed without any trouble.

Furthermore, there are many special advantages secured by making up your own bill of material and devising your own system, in this way. In the first place, an itemized bill of this kind all made up can be filled much more promptly than if we had to go to work and make up your working drawings and line up your entire system for you. This work, you understand, takes time and it causes a delay on the order of at least three or four days to get the system properly figured up. When we have the drawings all made up, then we count up the bill of material and the order is sent through, ready to be made up. It should not take over two or three days to be loaded on cars and ready for immediate shipment, unless we happen to be out of one or two items, which sometimes happens.

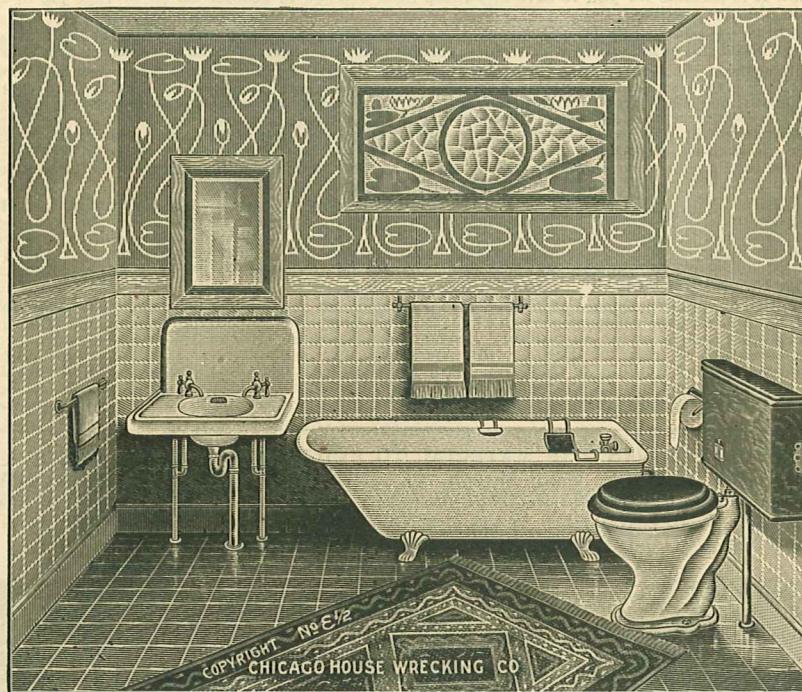
WE LOAN YOU TOOLS. We loan our customers all the necessary tools for cutting and threading all the pipe on any plumbing job; also all the necessary calking chisels, etc., and the plumbers' blast furnace, provided the order amounts to over \$100.00. We add these tools to your order and when you are through using them you can return them to us and we will refund you the money charged you for them, less the return freight charges, provided they are not seriously damaged or broken, beyond a due allowance for ordinary wear.

The foregoing instructions with reference to the use of the various tools in connection with the various connections and general instructions as brought out in these pages, cover practically all there is to the average plumbing system for an ordinary residence, and if these are carefully studied, we do not think that any one with average intelligence will experience any difficulty in connecting up a complete plumbing system in a building of this kind. Any special information that is desired will always be carefully furnished by us concerning any particular point in connection with an outfit which has been purchased, and the entire service and advice of our plumbing experts is always at the disposal of our customers.

WE WILL FURNISH THE MATERIAL TO BUILD THIS MODERN RESIDENCE INCLUDING ALL LUMBER, MILL WORK, GLAZED SASH AND DOORS, HARDWARE, NAILS, GUTTERING, SPOUTING, ETC., AS WELL ALL AS PLUMBING, BATH ROOM FIXTURES AND COMPLETE HOT WATER HEATING PLANT. ALL BRAND NEW AND FIRST-CLASS UP-TO-DATE MATERIAL FOR **\$925.00.**



BATH ROOM COMBINATION No. 3¹₂



COMBINATION NO. 3¹₂.

THE BATH TUB.—Cast iron, 3-inch roll rim, white porcelain enameled. The tub is 5 feet in length. White porcelain enamel is on the inside and over the roll rim. It is a graceful and comfortable tub, and is fitted with nickel plated double combination Fuller bath cock for hot and cold water, nickel plated supply pipes, nickel plated connected waste and overflow, with chain and rubber stopper.

The feet are of artistic design.

THE CLOSET is of the latest improved Syphon Jet pattern, made of absolutely non-absorbent vitreous china. The Syphon Jet Bowl is the most perfect type closet bowl on the market, holding a very deep water seal, making absolute security against sewer gas. The seat and cover attach directly to the bowl with nickel plated post hinges. The tank is of polished oak and lined with heavy copper; it has the best flushing device and nickel plated push button action.

The tank is arranged with a refilling arrangement, so that even though the bowl syphons out and should lose its water seal in flushing, when the tank is refilled a portion of water will overflow and fill up the bowl to the full level of the water seal again.

The tank has a nickel plated supply pipe with floor flanges and nickel plated 2-inch flush connection, closet floor screws and tank fastener.

THE LAVATORY consists of a cast iron countersunk lavatory with back and basin cast in one piece, and all heavily enameled with white porcelain. The basin is oval, 11x15 in size, with patent overflow. The lavatory has brackets, nickel plated air chamber supply pipes and nickel plated Fuller basin cocks and a nickel plated "S" trap with a waste to the floor, nickel plated floor flanges, nickel plated chain and rubber stopper.

NOTE.—We will furnish the lavatory supply pipes and trap to the wall when so specified without additional charge.

Price of the above combination, complete, as described, all guaranteed brand new.....\$50.00

You will also note on the illustrations various nickel plated trimmings which we quote as follows:

Nickel plated Toilet Paper Holder, for holding paper on rolls.\$0.75

Hard finish Oak Seat with nickel plated adjustable clamps, rubber bound for hanging over edge of bath tub.\$1.00

A handsome nickel plated brass Soap Cup, for hanging over the rim of the tub.\$1.00

Nickel plated Brass Towel Bar for bath tub, $\frac{1}{2}$ -inch diameter, 30 inches long, with 2 nickel plated brass posts holding same 3 inches from the wall.\$1.00

A second nickel plated brass Bar, 24 inches long, like the above, for the lavatory.\$0.90

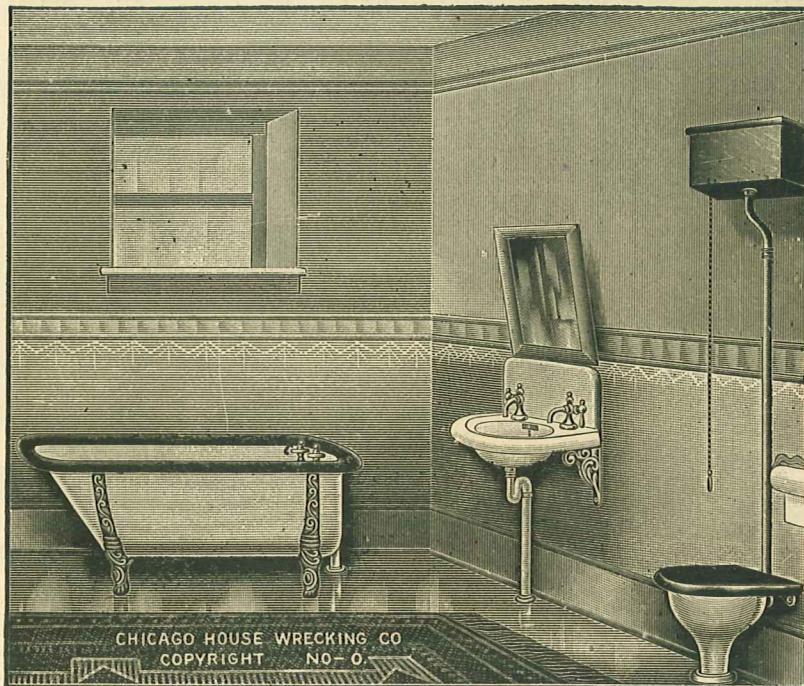
Special price for the above extra nickel plated trimmings.\$4.00

Making the complete outfit as shown in the illustration and as listed above.\$54.00

If a 4 or 4 $\frac{1}{2}$ -foot tub is wanted, deduct \$1.50; if a 5 $\frac{1}{2}$ -foot tub is wanted, add \$1.50; if a 6-foot tub is wanted, add \$3.00.

BATH ROOM COMBINATION No. 0.

PRICE \$25.00



THE BATH TUB. Modern and graceful in shape, made of heavy steel, white enameled on the inside and painted on the outside, and is finished with a polished hardwood rim with decorated cast iron legs. Length of tub is 5 feet.

The fittings consist of the following:

Nickel-plated, connected waste and overflow nickel-plated, double compression bath cock with tail pieces for iron or lead pipe (in ordering specify which); chain and rubber stopper.

THE LAVATORY. One piece, cast iron, roll rim, white porcelain enameled lavatory, nicely finished on the outside. It is for straight wall, and is all cast in one piece. It is absolutely sanitary. It is fitted with two nickel-plated compression basin cocks, nickel-plated "S" trap with waste to the floor, nickel-plated chain and rubber stopper; floor flanges and fancy brackets.

THE CLOSET is a sanitary Vitreous bowl, complete with a polished hardwood oak seat and copper lined oak tank, fitted with ball cock, siphon, chain, pull, etc. with nickel-plated flush pipe.

QUALITY The material of this outfit is all new. The bath tub is strictly perfect. Every fitting used on this outfit is perfect.

The closet bowl and lavatory slab are Class "B," but the defects are so slight that they will not impair the usefulness or appearance to any extent.

Price for this outfit \$25.00

NOTE. We will furnish this bath tub in $4\frac{1}{2}$ foot length at a deduction of 35 cents.

If $5\frac{1}{2}$ foot tub is wanted, add. \$0.60

If 6 foot tub is wanted, add. 1.60

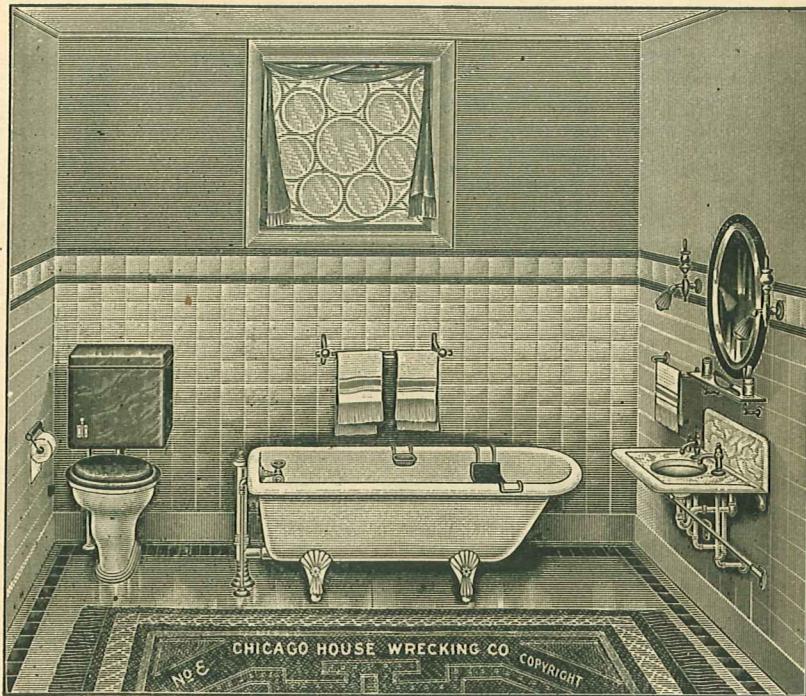
Will furnish nickel-plated supply pipes for this bath tub at an additional price of. 1.50

The Lavatory we will furnish with trap to wall instead of to floor at the same price.

We will furnish nickel plated supply pipes for lavatory at an additional price of. 1.50

This is a Good Outfit at a Low Price.

Combination No. 3, \$55.00



Combination No. 3.

THE BATH TUB.—Cast iron, white porcelain enameled, with heavy 3-inch roll rim. Tub is 5 feet in length, 30 inches in width, graceful in shape. A very comfortable tub. It is fitted with a double nickel plated combination bath cock for hot and cold water, nickel plated supply pipes, standing "Roman" waste, nickel plated, with latest appliances. The feet are artistic in design.

THE CLOSET consists of a latest improved syphon wash-down bowl, made of vitreous porcelain ware. It has seat and cover attached directly to the bowl, with nickel plated clamps and fittings. The tank is of the low-down pattern, round-cornered, copper lined, with best grade ball cock and improved push-button action flushing device, with nickel plated supply pipe and flush connection, with floor flange and rubber gasket.

THE LAVATORY is a countersunk, genuine Italian marble, with a solid porcelain 14x17 oval basin, with nickel plated brass rope pattern brackets, N. P. Fuller basin cocks, N. P. brass supply pipes with air chambers, N. P. brass trap (both trap and supply pipes to the wall), N. P. chain and rubber stopper, complete with clamps, screws and nickel plated flanges.

Price for the above complete, as described, all guaranteed to be brand new. \$55.00

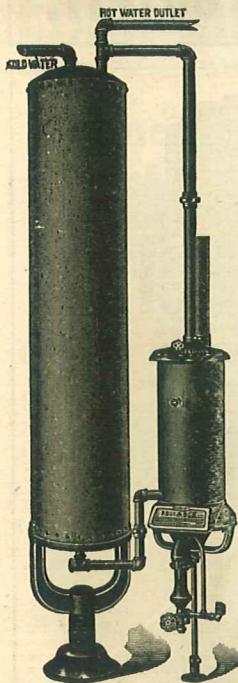
You will also note in this illustration various trimmings that we are showing with this outfit, which we quote as follows:

Nickel plated Toilet Paper Holder for holding paper on rolls. Price.....	.75
Hard finish Oak Seat with nickel plated adjustable clamps, rubber bound, for hanging over edge of bath tub. Price.....	1.00
A handsome nickel plated brass Soap Cup, for hanging over the rim of the tub. Price.....	1.00
Nickel plated brass Towel Bar for bath tub, $\frac{1}{2}$ inch diameter, 30 inches long, with two nickel plated brass posts, holding same 3 inches from the wall. Price.....	1.00
A second nickel plated brass Bar, 24 inches long, like the above, for the lavatory. Price.....	.90
Plate Glass Shelf, 24x5 inches, with nickel plated brass brackets. Price.....	4.00
Total.....	\$63.65

Our Special Price for Everything Listed, \$62.00

If 4 or $4\frac{1}{2}$ foot tub is wanted, deduct.....	\$1.96
If 5 $\frac{1}{2}$ foot tub is wanted, add.....	1.50
If 6 foot tub is wanted, add	3.00

Reliable Circulating Gas Water Heaters.



Our Reliable Gas Circulating Water Heater and Gasoline Heater we consider the best on the market. We do not claim that they are the cheapest but that they are absolutely the best. They can be connected to any kitchen range boiler as shown in the cuts on this page without interfering with the present kitchen range or furnace connections. The floor space they occupy is only eight inches in diameter. They are available for heating water instantly day or night and the advantage of this kind of heater is that it puts the hot water right in your circulating pipe and the water is available in the bath tub lavatory, on the kitchen sink or in the laundry tubs.

The cost of operation is very slight. The heaters are made with alternating solid sections and rings as you will note in the sectional view, so arranged that water constantly flows from the circumference to the center, from the center to the circumference, and back to the center again, as it works its way from the bottom to the top of the heater.

The No. 9 and No. 10 have polished steel casings. The No. 7 and No. 8 have cast iron casings. These casings are so arranged that nearly all heat is kept in the heater. The cast iron has no particular advantage for heating qualities but is, perhaps, a little more durable.

The burner is a very powerful heat producer. It has a removable loose cone so that it can be easily and thoroughly cleaned. It is also fitted with an adjustable valve enabling the simple regulation of burner for any pressure of gas.

We furnish these for either natural or manufactured gas. The casing around the coil is removable so that it is a very easy matter to clean the coil thoroughly.

Reliable Gas Circulating Water Heaters.

SIZES

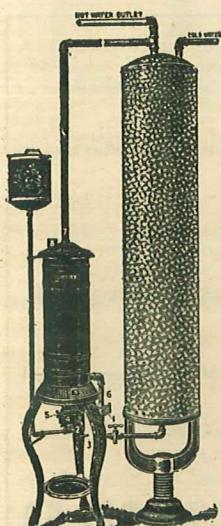
Water Heater with Polished Steel Casings.

Manufactured Gas	Natural Gas	Height of Heater	Diameter Casing	Price
No. 09	No. 10	22 1-2 in.	8 in.	\$10.00

Water Heater with Cast Iron Casings.

Manufactured Gas	Natural Gas.	Height of Heater	Diameter Casings	Price
No. 07	No. 08	20 1-2 in.	7 1-2	\$12.00

Reliable Circulating Gasoline Water Heaters



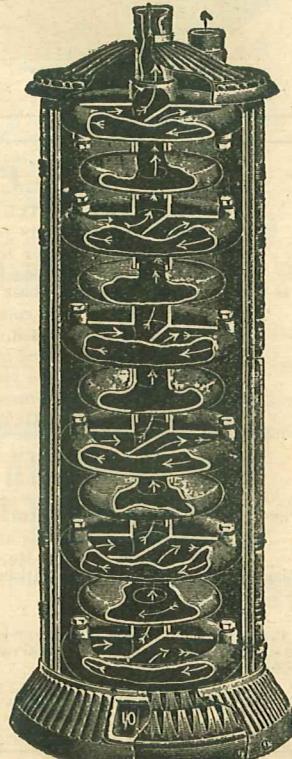
These heaters are made exactly like the gas heaters except that they are equipped with a tank for gasoline and arranged with the best known type of gasoline vapor burner. A test with a 30 gallon boiler filled with water at 50 degrees, gave the following results.

12 minutes raised to 164 degrees.
30 " " " 184 "
45 " " " 200 "
60 " " " 218 "

The gasoline heaters are made with the polished steel casings only.

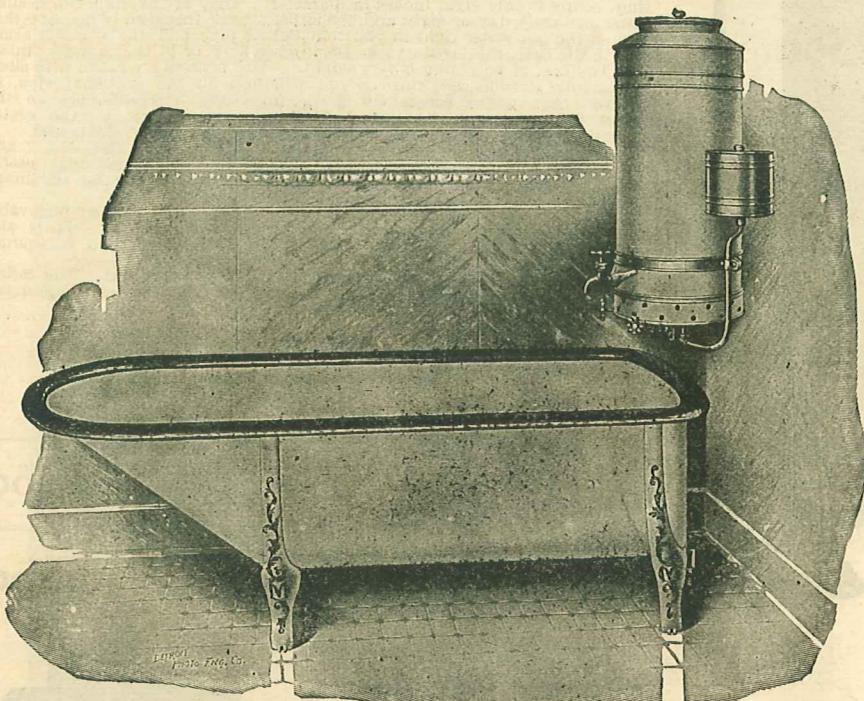
Height of Heater	Diameter of Steel Casing	Price
No. 5. 23 in.	7 1/2 in.	\$18.75

These heaters are not to be confused with the nickel plated instantaneous heaters which produce boiling hot water as fast as it flows through the heater.



Air Pressure Water Supply Systems For Country Homes.

COMBINATION BATH ROOM OUTFIT.



FIT FOR A KING.

THE CLEVEREST LITTLE COMBINATION ON THE MARKET. Entirely self-contained.

Hot Water always ready just when you want it.

Heats enough water for bath in 10 minutes.

No further expense attached to this outfit, simply set in place, fill the heater with water and it is ready for use. No Plumbing whatever.

No Range Boiler, stove connection or expensive piping system necessary.

Burns Gas, Gasoline or Oil. Portable, light and easily handled.

Just the Outfit for anyone not wishing to go to undue expense to fit up a Bath Room.

The Waste Water can be very easily arranged to run out of doors with a hose connection.

Suitable for the Handsomest Mansion or the Humblest Cottage.

The Tub is made of 24 Gauge Galvanized Steel, enameled white on the inside and blue outside. Relieved in gold and fully guaranteed.

We also furnish the Tub in White Metal Lining, Nickel Plated.

All Outfits supplied with 5½ foot Tub, unless otherwise specified.

Our Water Heater No. 10 as shown above is made of 24 gauge galvanized steel with copper coil and heat flue arranged at bottom of heater.

The capacity of Heater is about 14 gallons.

We also furnish Heater No. 11, same dimensions as No. 10 with white metal, nickel plated jacket on outside. Prices within reach of all.

PRICE LIST.

Price with 5½ Foot Steel Enameled Bath Tub, with No. 10 Galvanized Steel Heater.....	\$14.50	Price with 5½ Foot Nickel Plated Bath Tub, with No. 11 Nickel Plated Heater.....	\$17.50
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Chicago House Wrecking Co., Chicago, Ill.

Gentlemen:—We want to write you that we are more than pleased with Combination No. 5, we have the most beautiful home in this vicinity everything came true to your guarantee.

Mrs. J. R. Head, Bainbridge, Ohio.

Bainbridge Ohio.

Enameled Iron Closet Tanks!

Something New. A Radical Departure
From Old Ideas.

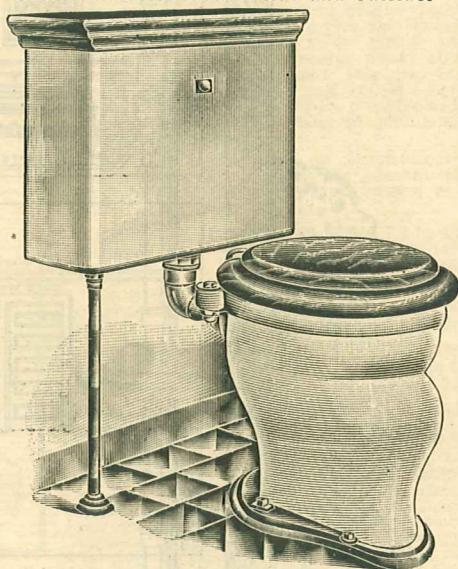
NO MORE LEAKY TANKS.



SYPHON JET OUTFIT, \$13.50

NO MORE WARPED WOODWORK.

These Tanks are made of Iron and are
White Enameled Both Inside and Outside.



SYPHON WASH DOWN OUTFIT \$11.00

Light, compact, easily set up. Impossible for leaks to develop, Simplest Flushing Mechanism with fewest working parts of any tank on the market. Cannot get out of order.

Presents an elegant appearance. Looks like solid porcelain. Imitation Mahogany finish wood cover. Without any question the best tank to be had on the market at any price.

The seat is furnished with cover and fitted direct to bowl with Nickel Plated hinges.

We can furnish these outfits with any kind of bowl Syphon Washdown, Syphon Jet, etc

Note our prices.

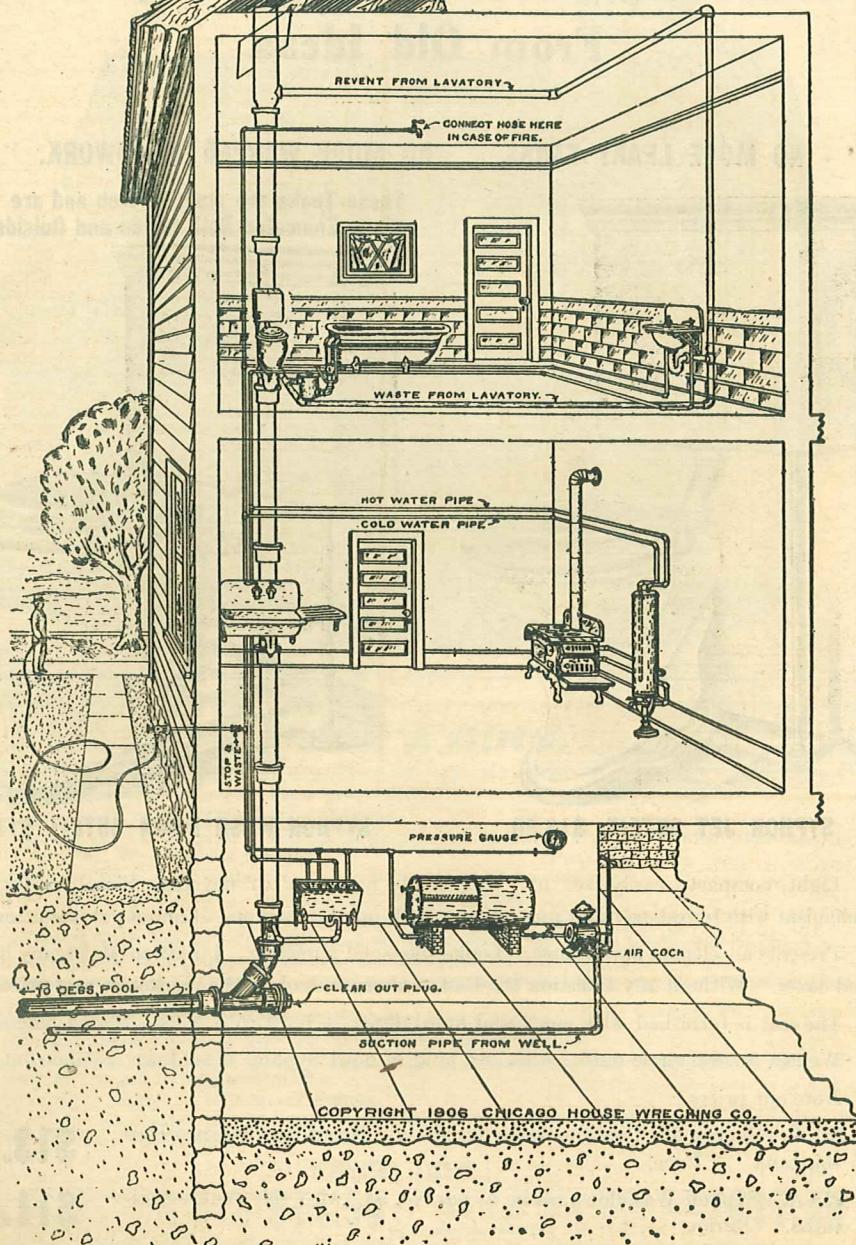
No. 251 A.—Syphon Jet Outfit, same as our No. 51, except that we substitute this tank. Price.....	\$13.50
No. 255 A.—Syphon Washdown, same as our No. 55, with this tank substituted. Price.....	\$11.00

Chicago House Wrecking Co., Chicago, Ill.
Gentlemen:—I received the Bath Room Fittings a few days ago and am highly pleased with the character of the goods.

The plumbing fixtures and trimmings have been entirely satisfactory to me and I will certainly recommend you to anyone here wishing to buy such articles from away. Yours truly,

E. H. Herbel, Architect.

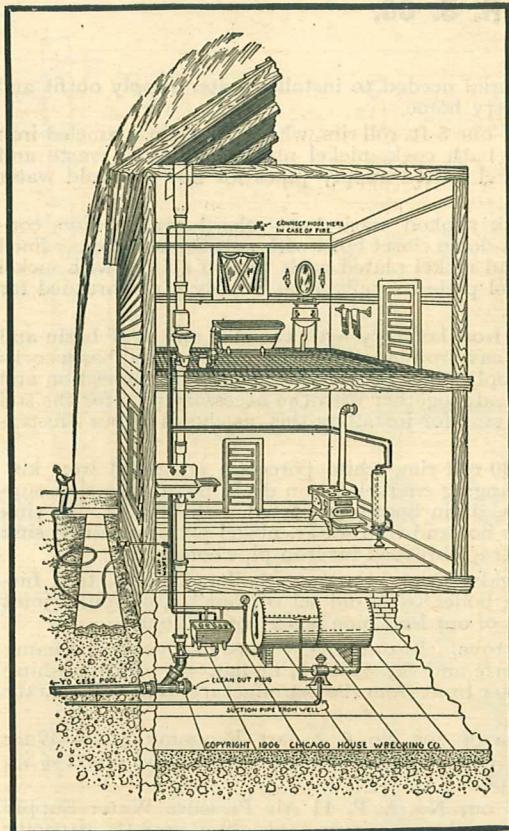
Citronelle, Ala.
Gentlemen:—I received the Bath Room Fittings a few days ago and am highly pleased with the character of the goods.

COMPLETE HOUSE PLUMBING
OUTFIT, No. H. S. 50.PRICE, EVERYTHING COMPLETE, \$190.00.
WITH FULL INSTRUCTIONS FOR INSTALLING.

WRITE FOR OUR SPECIAL HEATING CATALOGUE.

AIR PRESSURE SUPPLY SYSTEMS

RUNNING WATER FOR ANY HOME.



such an outfit, including all the necessary pipe and fittings for any of the house plans listed in this book. If you will decide about what sized tank you want and whether hand or power pump apparatus

CHICAGO HOUSE WRECKING CO.:

My Air Pressure Water System works to perfection.

South Barnstead, N. H., December 5, 1907.

(Signed) J. H. PRIME.

CHICAGO HOUSE WRECKING CO.:

The Air Pressure Water Supply System that I purchased from you, works very satisfactorily and I am well pleased with it.

Harrisburg, Pa., April 23, 1907.

(Signed) FRED KELLER.

CHICAGO HOUSE WRECKING CO.:

Ten pounds pressure furnishes an ample supply with plenty of force to the 2nd story bath room of our house. We use hand pump entirely and it requires about half an hour's work each day to give us a plentiful supply of running water. My system certainly has been the most complete and perfect water system I have ever seen. It has not given us one minute's trouble nor one cent of expense.

Osceola, Ark., April 18, 1907.

(Signed) W. J. LAMB.

CHICAGO HOUSE WRECKING CO.:

I am well pleased with the Air Pressure Water System that I bought of you. It works perfectly.

(Signed) A. H. DEAN.

CHICAGO HOUSE WRECKING CO.:

The complete house plumbing outfit No. HS50 with the Air Pressure Water System which I purchased from you in October last, is giving entire satisfaction. It works like a charm.

Galatia, Ill., April 17, 1907.

(Signed) D. T. UPCHURCH.

CHICAGO HOUSE WRECKING CO.:

I have installed the Air Pressure Water System which you sent me and am running my pipes to the barns and feed yards, etc., besides supplying the water for a large house, including bath room.

The supply has not failed us once since installed last January, and we have better and more reliable pressure than we use to have from the Chicago Water Works. We have used only the wind-mill pump (with no alteration except the addition of a stuffing box for the pump rod) up till the present, but have recently installed a power pump to supply the additional summer demand. The outfit is a great success.

Goldfield, Ia., May 5, 1907.

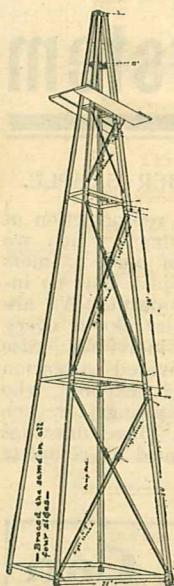
(Signed) RALPH SOLLITT.

WIND MILL AND TANK TOWERS.

Heavy four post angle steel towers. The corner posts lap outside to make a rainshed, and are made of heavy angle steel proportioned to the size and height of the tower, to the weight which it must support, and the strain which it must withstand. The bands are angle steel. The tower are galvanized after completion and so are perfectly galvanized to withstand the rust action. The brace rods are round steel and are provided with tension adjustment. They are not to be confused with any light, cheap towers that others may be offering and getting more money for than we offer these extra heavy strong towers for. They are absolutely first class and will give perfect satisfaction in every way. These towers are complete with platform, guy ropes, anchor posts and anchor plates. They are shipped knocked down to take a low freight rate, but are each carefully fitted together complete before shipment, so that there will be no question about their being readily put together again. These towers are sufficiently strong to permit a platform being built across at the 20 foot level, to support a tank 4 feet in diam. by 4 feet high.

\$16.00

Price 30 foot tower.....



Towers No. 904 are made entirely of steel. The four vertical risers are made of latticed columns, braced with angles. They are also complete with bearing plates. The top I beams are punched with holes so platform can be bolted into it. Price do not include platform and tank.

We can make towers larger than 250 bbl. capacity and will give you special quotations upon your stating your requirements.

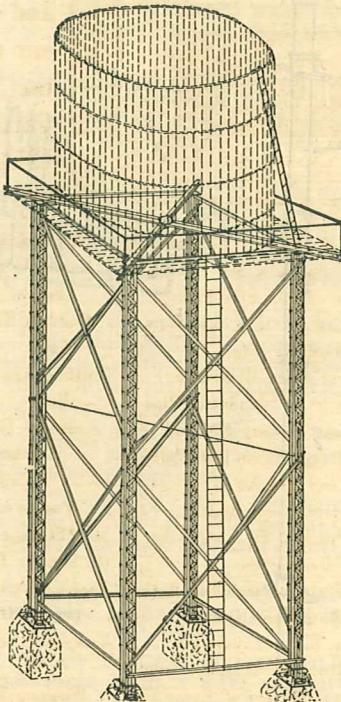


FIG. No. 904.

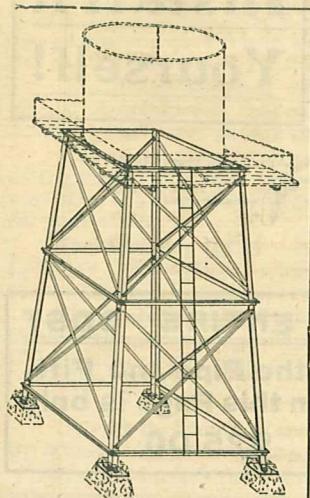


Fig. 804.

No.	Height	Width of Top	Width of Bottom	Safe Load	Price Painted Red
7	20 ft	9x9 feet	9x9 feet	200 bbls. water with tank and platform, 250 bbls. water with tank and platform.	\$275.00
8	25 ft	10x10 feet	10x10 feet	200 bbls. water with tank and platform, 250 bbls. water with tank and platform.	300.00

FIG. No. 804.

No.	Height	Width of top	Width of bottom	Safe Load	Price Painted Red	Price Galv.	Total Weighth
1	12 ft	6x6 feet	9x9 feet	75 bbls. water with tank			
2	16 ft	6x6 feet	9x9 feet	75 bbls. water with tank	\$100.00	\$150.00	1989 lbs.
				100 bbls. water with tank	112.00	168.00	2230 lbs.
3	12 ft	10x10 feet	13x13 feet	100 bbls. water with tank and platform	124.00	186.00	2470 lbs.
4	16 ft	10x10 feet	13x13 feet	100 bbls. water with tank and platform	136.00	205.00	2734 lbs.
5	20 ft	10x10 feet	14x14 feet	100 bbls. water with tank and platform	158.00	237.00	3174 lbs.
6	25 ft	10x10 feet	15x15 feet	100 bbls. water with tank and platform	175.00	260.00	3576 lbs.

The above towers are made entirely of steel angles with heavy steel bearing plates, to be set in cement. The top angles are punched with holes so bottom of tank and platform can be bolted to it. None of the above prices include platform and tank.



Write at once for our Big Catalog and Save Money

← →

WONDERFULLY Low Prices on every imaginable line of Ordinary Merchandise. We purchase our goods from SHERIFFS' and RECEIVERS' SALES throughout the country, and the prices quoted in this Big Catalog on our material, in many cases does not represent the Actual Cost of manufacture. This Big Catalog mailed to you absolutely FREE OF CHARGE; postage paid.

Building Material Lumber
 Mill Work Plumbing and Heating
 Apparatus Pipe Pipe Fittings
 Mantles Grates Sash and Doors
 Windows, Etc.
 Roofing of Every Description
 Eaves Trough Conductor Pipe
 Greenhouse Heating Material
 Heating Plants, Steam Hot Water
 and Hot Air
 Radiators Boilers
 Valves, Fittings, Etc., of Every
 Description
 Plumbing Fixtures, including Bath
 Tubs, Bath Room Outfits,
 Closets, Sinks, Lavatories
 Water Heaters Laundry Tubs
 Plumbers' Fittings of Every
 Description Plumber's Tools
 Air-Pressure Water Work Systems
 Pumps
 Poultry Netting Shovels Vises

Blacksmith's Tools Axes
 Carpenter's Tools Anvils
 Forges Post Drills
 Builders' Hardware Scales
 Safes Vault Doors
 Hoisting Apparatus Refrigerators
 Rugs Linoleums, Etc.
 Complete House Supply Outfits
 Automatic Water Lifts
 Cellar Drainers
 Pumps and Well Supplies
 Steel Storage Tanks Wagon Tanks
 Oil Storage Tanks Tank Heaters
 Feed Cookers Belting of Every
 Description
 Telephone and Electrical Supplies
 Paint Paint Brushes
 Washing Machines Gasoline
 Lighting Plants Gasoline Lamps
 Circular Saws Bolts
 Structural Iron Material of Every
 Description Turnstiles

Hose for Every Size and for
 Every Purpose
 Keys Furniture
 Conveying Apparatus, Pulleys
 Mill Wright Supplies
 Shafting, Hangers, Etc.
 Link Chain Belting Sprocket
 Wheels Emery Wheels
 Church and School Bells
 Manilla Rope Wire Rope
 Tackle Blocks Wire of Every
 Description Jack Screws
 Wire Fencing Barb Wire
 Rails and Fish Plates Iron Chain
 Sidewalk Illuminating Tile
 Manhole Covers Smoke Stacks
 Belting To Order in any Size
 Horizontal, Tubular and Fire Box
 Boilers Brand New Wood-
 Working Machinery
 Machinery of Every Description
 Engines of All Makes

THE above list is only a mere suggestion of the enormity of our stock and our position to furnish you with almost everything in every line of Merchandise, and the prices that we quote on this material are all wonderfully low. Be sure to get this Catalog and go through it carefully; it will pay you. Remember, the greater part of all our material is purchased throughout the country from Sheriffs' and Receivers' Sales, following business disasters throughout the country, and this accounts for our being able to offer you such wonderfully Low Prices.

CHICAGO HOUSE WRECKING CO. 35th & Iron Sts., CHICAGO

INSTALL A MODERN AIR-PRESSURE WATER WORKS OUTFIT IN YOUR HOME

WHY put up with the endless annoyances of old time methods when you can just as well install one of these modern outfits in your home at such a reasonable cost.

Put the air pressure tank in your basement, connect the pump up with your well and with a tank connect the air pump, and the outfit is complete. Simple and impossible for it to get out of order. The water will be kept cool in summer and you will never have trouble with it freezing in the winter, as is the case with an elevated tank system standing out doors.

With one of these outfits you can have every modern convenience of a complete, modern bath-room outfit in your home and running water under full pressure any place you wish to carry the piping. You can run a pipe to the outside sill of your house and put on a sill cock for lawn sprinkling, and have every convenience that is to be had in a modern city home. Ten minutes' pumping each day fulfills all average requirements for an ordinary family.

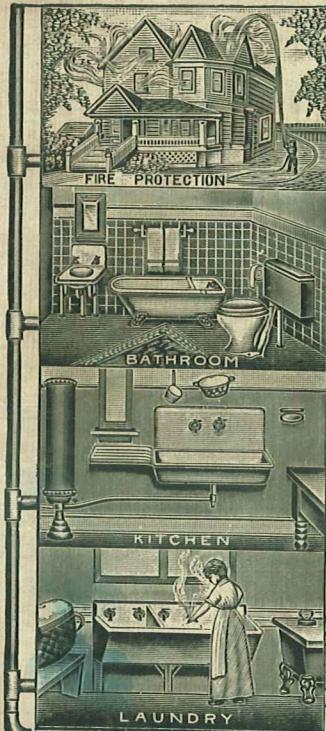
WATER IN ABUNDANCE

at your command in any part of your house for instant use. Complete plans and instructions furnished with each outfit. Any ordinary mechanic can install it; experience unnecessary.

Why not install one of these systems at once. We will guarantee to make you a very low price on the complete outfit. We warrant these systems to be equal or superior to any system on the market at the present time.

PRICES SMASHED TO PIECES

Do not let the very low prices that we are quoting on these outfits give you the impression that they are not of high grade material and workmanship in every way. We back them against any similar outfits on the market at the present time, both as to their workmanship and quality, etc., and they will give you just as good satisfaction in every way as any of the higher priced outfits on the market.



WRITE FOR OUR ESTIMATE

Send us a complete sketch of your house at once, explaining the conditions, and if you have a deep well to pump from, it will be necessary for us to figure on a special pump for the purpose, and let us know where you can best place the air pressure tank; how far the well is from the house and how many fixtures you want to supply water to, etc. On receipt of this information, we will be able to figure up a complete outfit for you and we will guarantee to save you money.

GASOLINE ENGINE DRIVEN OUTFIT

We can fit you out complete with a gasoline driven outfit with the most modern and up-to-date engine and pumping equipment manufactured. One that will give you absolute satisfaction in every way, and thus do away entirely with the necessity of any pumping by hand whatever. Simply start the engine and let it run for about 4 or 5 minutes; then shut it down and you will have an abundant supply of water sufficient to last 2 or 3 days. No manual labor whatever required.

We are in a position to furnish these outfits from the smallest to the largest size. Every tank guaranteed absolutely brand new and perfect, air tight and of the highest grade of material and workmanship. We furnish these outfits complete with all Gauges, Valves, etc., and with our complete instructions which we furnish with each outfit you will have no trouble whatever in getting it set up without a hitch. Write at once for prices.

Price for this system

\$48.00

Other systems up to \$200.00

